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INVESTIGATING THE RELATIONSHIP BETWEEN EQUITY AND GRADUATE OUTCOMES IN AUSTRALIA

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Make tomorrow better.

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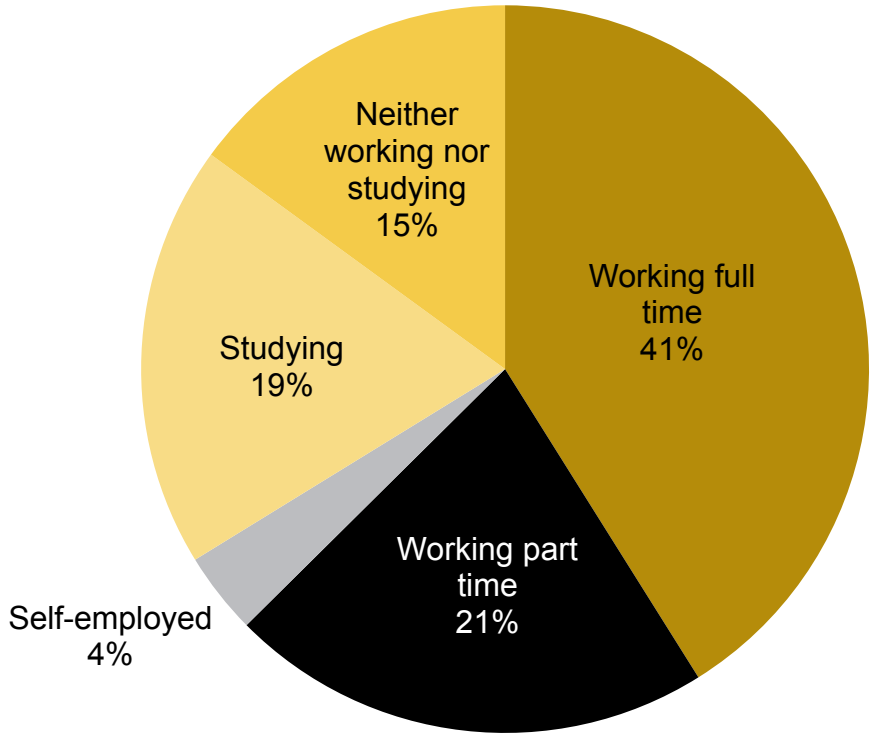
Executive Summary

Australian higher education equity policy focusses mostly on access and participation with the implicit assumption that disadvantage will be ameliorated through educational achievement. Less is known as to whether patterns of disadvantage continue post-completion. In a context in which graduate employability is becoming an important yardstick against which to measure institutional effectiveness, this questions is of fundamental importance to higher education equity practitioners and policymakers.

This study employed Commonwealth graduate outcome data to investigate relationships between disadvantage and graduate outcomes in Australia, with disadvantage defined as a graduate belonging to one or more of the following groups – low SES. Indigenous, regional, with a disability, from a non-English speaking background (NESB), born outside Australia and female in a technical area. The study provided critical insights into how access to higher education does – or does not – lead to improvements in post-graduation equity.

The study utilised data from the 2014 Australian Graduate Survey (Department of Education and Training, 2014) which reported information on graduate outcomes from a total of 142,647 graduates who completed their studies in 2013 and 2014. The data was collected between four and six months after graduation at which time many graduates were simultaneously undertaking multiple activities such as working, studying and searching for work time. Mindful of this complexity the team employed five discrete categories for the data analysis, as illustrated at Figure 1. It is important to note that none of these categories excluded seeking work.

Figure 1: Discrete categories of graduate activities (n=140,912)



Data analysis focused on the graduate outcomes of those from disadvantaged backgrounds. For the purposes of this study 'disadvantage' was theorised as constituting several independent, but potentially overlapping, characteristics, with varying numbers of graduates in each cohort:

- Indigenous Australians (Aboriginal and Torres Straits Islander people) – 1,106
- Graduates with a disability - 4,229
- NESB (speaking a language other than English as their first language) - 39,408
- Born outside Australia - 55,166.
- Regional (living outside the capital city of any state or territory) - 25,240.
- Low SES (from bottom socio-economic (SES) quartile) – 11,151.
- Female graduates from engineering, science and information technology fields – 8,603

Disadvantage by field of education

Graduates from disadvantaged backgrounds were clustered in particular fields of education:

- Graduates from regional areas and from low SES backgrounds were particularly concentrated in the fields of *medicine and related studies* and *education*.

- Indigenous and graduates with a disability were particularly concentrated in the field of *society and culture*.

- Graduates born outside Australia or who spoke a language other than English at home were particularly concentrated in the fields of *management and commerce* and *engineering and related technologies*.

Beyond the breadth of the field of education categories, further nuances were seen, particularly in the broad areas of *medicine and related studies* and *society and culture:*

- Graduates from many disadvantaged groups were clustered within the sub-fields of broad disciplines that are arguably regarded as lower status (and which are less well paid), such as nursing and teaching.

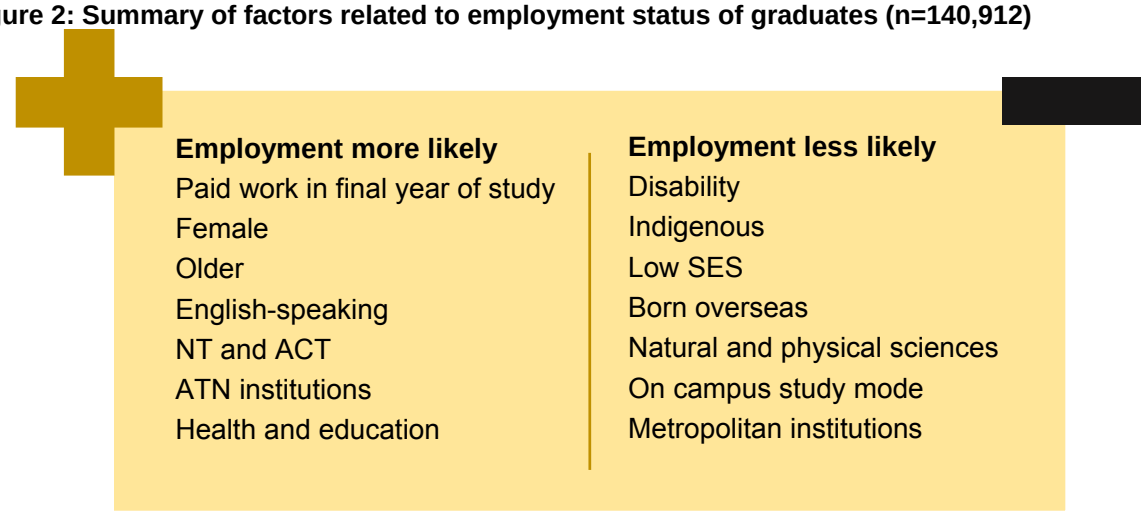
- In the broad field of *medicine and related studies* graduates from disadvantaged backgrounds were clustered in the fields of *nursing and midwifery* and *public health.*

- In the broad field of *society and culture*, graduates from disadvantaged backgrounds were clustered in the fields of *human welfare studies.*

Employment patterns

Analysis of the outcomes of all graduates revealed several employment-related themes, many of which persisted as patterns among graduates from disadvantaged backgrounds. The strongest pattern was that graduates who undertook paid work in the final year of study were much more likely to be employed than those who did not. The key predictors of employment are summarised at Figure 2.

Figure 2: Summary of factors related to employment status of graduates (n=140,912)



In addition to overall patterns of employment, nuanced patterns among graduates from disadvantaged backgrounds were demonstrated by showing how multiple categories of disadvantage had a negative impact on graduate employment. The most significant of these was disability which was identified as a key factor in the post-graduation employment prospects of students.

- Having a disability decreased the likelihood that graduates were working if they were Indigenous, from a regional area, NESB, low SES, born outside Australia or were women in a technical area.

- Coming from a low SES background decreased the likelihood that graduates were working if they were Indigenous, had a disability, spoke a language other than English at home, were born outside Australia or were women in a technical area.

- Speaking a language other than English at home decreased the likelihood that graduates were working if they had a disability, were from a regional areas, were born outside Australia, were low SES or were women in technical areas.

- Being born outside Australia decreased the likelihood that graduates were working if they had a disability, were from a regional area, spoke a language other than English, were low SES or were women in technical areas.

All outcomes

Looking at employment as the only graduate outcome can distort the interpretation of what a 'successful' graduate looks like. Thus the second phase of analysis examined four categories of outcomes: working full time, working part time, being self-employed and studying. These categories were compared with those graduates who were neither working nor studying. A number of patterns arose from these analyses, for example:

- Undertaking paid work in the final year of study greatly increased the likelihood that graduates were in full time work, in part-time work, self-employed or studying.

- Younger graduates were more likely than older graduates to be studying while older graduates were more likely to be self-employed.

- Regional, NESB and low SES graduates were more likely to be studying if they were Indigenous.

- Having a disability decreased the likelihood of full time or part time work for NESB graduates and graduates born outside Australia.

- Being born outside Australia decreased the likelihood that and NESB graduates were working full time.

- Speaking a first language other than English decreased the likelihood of further study for low SES graduates and female graduates in technical areas.

- Being male increased the likelihood of self-employment for low SES graduates, graduates born outside Australia, NESB graduates and regional graduates.

These findings suggest that multiple disadvantage nuances the likely outcomes of graduates and should be taken into account in interpreting graduate outcomes data.

Paid work in the final year of study

The study determined that undertaking paid work in the final year of study is the single most important factor in predicting whether a graduate would be working at the time of the AGS survey. Key findings include the following points:

- More than 70 per cent of graduates reported undertaking paid work in the final year of their study, with the proportion highest among graduates from regional areas, who were Indigenous or who were low SES.

- Of those graduates who reported undertaking paid work during their final year of study, more than 60 per cent still worked for the same employer.

- Two-thirds of graduates who were still working for the same employer as during their final year of study were not seeking alternative employment.

- Less than a quarter of graduates who were still working for the same employer as during their final year of study were in a role for which their qualification was a formal requirement and half reported that their qualification was only somewhat important or not important.

These findings indicate that disadvantaged students are likely to work during their studies and that many of these graduates may not hold graduate-level positions. The findings highlight the need for further interrogation of graduate employment data to determine whether employed graduates have gained professional work as a result of their studies or remain in the same non-professional role they held while studying. The findings also emphasise the need for more nuanced data collection instruments.

Salary outcomes

Employment *per se* is not the only measure of successful graduate outcomes. Another good indication of employment outcome is the salary that graduates earn. The study analysed salary differentials separately for graduates employed full-time and part-time. Key patterns are seen in the following points:

- Graduates from the top and second-top SES quartiles earned more than those in the bottom SES quartile.
- Indigenous graduates earned less than non-Indigenous graduates.
- Graduates born outside Australia earned less than those born in Australia.
- Graduates with a disability earned less than graduates without a disability.
- NESB graduates earned less than those who spoke English at home.
- Male graduates earned more than female graduates (full time only).
- Graduates from ATN and IRUA institutions earned less than graduates from GO8 institutions.
- Graduates who had studied via a distance mode earned more than graduates who had studied on campus.
- Graduates who undertook paid work in their final year of study earned less than those who did not do so but were more likely to be in employment.

Overall, these patterns suggest that patterns of disadvantage persist after graduation in the salary that graduates gain from employment, in both full-time and part-time work.

Types of employment

Graduate rates of employment provide little information about the type of work that graduates are doing. For greater nuance, the research team analysed employment sector, graduate roles, contract type, and how graduates had found the work they were doing. The findings highlight contrasting employment patterns among Indigenous and regional graduates, for example:

- The government employed Indigenous graduates in greater proportion than all other graduates, but a smaller proportion of Indigenous graduates was employed in industry and commerce.
- Indigenous graduates and graduates with a disability were employed by not-for-profit organisations in greater proportions than all other graduates.
- Compared with other graduate cohorts, Indigenous health and education graduates were more likely to work in the public rather than private health and education sectors.
- Compared with other graduate cohorts, Indigenous and regional graduates were more likely to working in education and in health and community services.
- Compared with other graduate cohorts, NESB graduates were more likely to work in the retail trade, in manufacturing and in accommodation, cafes and restaurants in greater proportions than all other graduates.

- Compared with other graduate cohorts, NESB graduates and graduates born outside Australia were more likely to work in the finance and insurance sector and as information and communication technology professionals.

- NESB graduates, graduates born outside Australia and graduates with a disability most commonly held temporary or casual contracts.

- Fixed term contracts of up to 12 months were most common among low SES and regional graduates. Fixed term contracts of more than 12 months were most common among Indigenous graduates, NESB graduates and graduates born outside Australia.

- In order to find work, regional graduates were most likely to approach an employer directly. NESB graduates made the greatest use of friends and family, and Indigenous graduates made most use of work contacts or networks.

These findings suggest that patterns of employment, including sector, type of employer, role, contract and means of finding work are nuanced by patterns of disadvantage, particularly among Indigenous and regional graduates.

Qualitative insights

To create a deeper understanding, the study employed comparative, qualitative data from a national Australian Office for Learning and Teaching (OLT) funded project on employability, conducted in 2014-15 (Bennett, Richardson & Mackinnon, forthcoming). A focus on responses from NESB, Indigenous and low SES students revealed the following key points:

- Students were asked what key characteristics employers look for in graduates and the characteristics common to professionals in their field. Students from equity groups identified discipline specific skills and knowledge, professionalism (including work ethic), experience and communication skills.

- Students from all three equity groups expressed concern about the difficulties of gaining work experience. These students focused on the need for greater exposure to professional work either through the way in which their courses were taught or through work placement opportunities.

- Non-equity students were more likely than students from the three equity groups to provide multi-faceted responses which demonstrated a deep awareness of desirable employability skills and attributes.

- Low SES and Indigenous students regarded university teaching staff to be by far the most important source of information on careers and professional characteristics. They made almost no mention of other sources of information, whereas NESB students also sought information from families, friends and the internet.

- Students from all three equity groups felt that the greatest difference between themselves and professionals in their field concerned disciplinary skills and knowledge.

- To enhance their employability, students from all three equity groups focused on study and gaining work experience, followed by practising their skills. These cohorts were the least likely to mention university resources such as careers centres or professional learning opportunities.

- Students from all three equity groups reported that whilst they would gain skills and knowledge from their university studies, they would not learn how to be a professional, to manage themselves, or to navigate the world of work. Only NESB students reported that their degree programs would help them learn how to interact with others.

These findings highlight the critical role of university teaching staff and career educators in scaffolding the learning of students from disadvantaged backgrounds, particularly in relation to career opportunities, the development of professional identities and self-efficacy, and the generation of work placement opportunities. They also indicate the desire of students from disadvantaged backgrounds to gain greater exposure to professional contexts during their studies.

Recommendations

1. Use a measure of post-graduation employment that distinguishes between employment gained as a result of graduation and employment that is a continuation of that done while studying. Ensure that this measure can differentiate between graduate-level and other work.

2. Make provision for multiple graduate outcomes in reporting AGS data, such as graduates who undertake multiple part time roles or consulting roles that combine to provide full-time employment.

3. Broaden definitions of graduate success in light of the changing labour market and graduates' increasingly diverse activities. The notion that a full time job is the ultimate graduate outcome is increasingly out of date with graduates involved in entrepreneurship and start-up activities that do not neatly fit into current AGS categories.

4. Gather data from graduates at multiple intervals of time following graduation, such as through the Beyond Graduation Survey. This will enable evidence to be collected about the longer-term contribution of university education to careers rather than only the immediate short-term outcomes.

5. Recruit students from disadvantaged backgrounds into all fields of education. Students from disadvantaged backgrounds tend to be clustered in those fields of education which tend to lead to relatively lower status and less well paid occupations such as teaching and nursing, with low numbers of disadvantaged graduates in occupations which tend to be higher status and better paid such as law, medicine and financial services.

6. Provide support and training for teaching staff in providing students with career information. This is particularly important in helping students from disadvantaged backgrounds find out about career options as they may have few other sources of information to help them.

7. Identify barriers to employment among graduates from disadvantaged backgrounds, particularly those with a disability.

Contents

Figures and tables

Acronyms

ACER	Australian Council for Educational Research
AGS	Australian Graduate Survey
ATN	Australian Technology Network
FT	Full time
GCA	Graduate Careers Australia
GO8	Group of Eight
HECS	Higher Education Contribution Scheme
IRUA	Innovative Research Universities
NESB	Non-English Speaking Background
OLT	Office for Learning and Teaching
PT	Part time
RUN	Regional Universities Network
SES	Socio-Economic Status

Introduction

Australian higher education equity policy focuses mostly on access and participation with the implicit assumption that disadvantage will be ameliorated through educational achievement. Less is known as to whether patterns of disadvantage continue post-completion. In a context in which graduate employability is becoming an important yardstick against which to measure institutional effectiveness, this question is of fundamental importance.

This project used Commonwealth graduate outcome data to investigate relationships between disadvantage and graduate outcomes throughout Australia. This provided a critical insight into how access to higher education did – or did not – lead to improvements in post-graduation equity.

The intention of the research was to identify pertinent patterns indicating whether or not pre-tertiary disadvantage was mitigated by higher education completion. In reporting this intention the report is divided into the following sections:

- **Methodology** – including data source, research questions, definition of research population and variables for analysis.
- **Context** – key parameters of graduate outcomes for the overall population and their concentration in particular fields of education.
- **Key predictors of graduate outcomes** – factors that predict graduate outcomes for all graduates and for cohorts from disadvantaged backgrounds.
- **Paid work in the final year** – the relationship between paid employment in the final year of study and graduate outcomes.
- **Salary outcomes** – factors that predict salaries for all working graduates and for working cohorts from disadvantaged backgrounds.
- **Type of employment** – patterns in the type of employment, employer, employer sector, occupation and employment contract for all working graduates and for working cohorts from disadvantaged backgrounds.
- **Qualitative data** – data collected from graduate cohorts from disadvantaged backgrounds that sheds more light on their graduate outcomes
- **Recommendations** – suggestions to inform future data collections from graduates and for the higher education sector and institutions to consider in enhancing graduate outcomes.

The aim of the project was to make a substantial contribution to scholarly understandings of graduate outcomes, both nationally and internationally. It is hoped that the findings detailed in this report will play an important role in clarifying some of the key determinants of graduate outcomes for equity groups, and in particular the relationship between higher education completion, disadvantage and employment.

Background

In 1989, the Australian higher education sector underwent massive restructuring in order to significantly increase the number of places available and move the sector further into mass and towards eventual universal education. In addition to increased national productivity, a key goal of the reforms was equity:

> The overall objective for equity in higher education is to ensure that Australians from all groups in society have the opportunity to participate successfully in higher education. This will be achieved by changing the balance of the student population to reflect more closely the composition of society as a whole. (Department of Employment Education and Training, 1990, p. 2)

In particular, the following groups of students were targeted to encourage access to higher education in greater numbers:

- People from socio-economically disadvantaged backgrounds
- Aboriginal and Torres Strait Islander people
- Women, particularly in non-traditional courses and postgraduate study
- People with disabilities
- People from non-English-speaking backgrounds
- People from regional areas

Specific targets were set for each group relating to access and participation. These were later formalised into equity and general performance indicators (Martin, 1994). Subsequent reviews of higher education policy maintained the focus on access and participation, though the issue of graduate employability for all students started to come into its own prominence after 2000 (cf. Nelson, 2002). However, for the equity groups of students, policy focus remained on gaining entry to universities rather than on post-graduation outcomes.

The same was true of the 2008 Review of Higher Education (Bradley, Noonan, Nugent, & Scales, 2008), which set completion targets for students in general but maintained enrolment targets only for equity groups of students. However, the report did recommend that further work be undertaken on the reasons students fail to complete their studies. Furthermore, specifically in respect of Aboriginal and Torres Strait Islander students, the outcomes, rather than access to, higher education was raised as an issue requiring greater attention.

A subsequent (2012) *Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander People* gave particular attention to "how improving higher education outcomes among Aboriginal and Torres Strait Islander people will contribute to nation building and reduce Indigenous disadvantage" (Behrendt, Larkin, Griew, & Kelly, 2012, p. 9)

Each year, the Australian Government Department of Education and Training releases selected higher education statistics, including two appendices relating to equity-group students. Since 2008, information has been published on the attainment rates of five of the six equity groups, based on award course completions.[1] In 2014, the Department released a

[1] Attainment rates were not given for women enrolled in non-traditional areas of study.

cohort analysis of the completion rates of domestic Bachelor students in 2012 (Department of Education, 2014). The following findings were pertinent to equity students:

- 76.5% of students from a high SES background completed their studies. Completion rates for other socio-economic groups were 71.3% for students from a medium SES background and 67.7% for students from a low SES background.
- 45.5% of students from an Indigenous background completed their studies compared with 72.6% of students from a non-indigenous background.
- 73.7% of students from metropolitan areas in Australia completed their studies. The completion rate for regional students was 68.5% and for remote students was 58.3%.
- 77.7% of students from a non-English speaking background completed their studies compared with 72.1% of students from an English speaking background.

The report was updated the following year (Department of Education, 2015) and confirmed essentially the same trends: that completion rates were lower for disadvantaged students. In the same year a briefing paper was released by the Australian Council for Educational Research (ACER), using slightly different data, found almost identical completion rates for low-SES students, regional and remote students and Aboriginal and Torres Strait Islander students (Edwards & McMillan, 2015a). In 2015 a larger scale report by ACER observed:

> The reasons [for non-completion] noted more commonly by equity-group students than other students revolve around finance, family obligations and core issues relating to 'getting by', whereas the issues noted more commonly among advantaged students than equity group students centre around issues of 'choice' and lifestyle. (Edwards & McMillan, 2015b, p. vi.)

For many years, Graduate Careers Australia (GCA) has published detailed graduate outcomes data, via the Graduate Destinations Survey component of the Australian Graduate Survey (AGS). However the focus for GCA is on starting salaries by broad fields of education and employment sector. In terms of demographics, information is provided only for sex and age (cf. Graduate Careers Australia, 2014).

In this report we move beyond completion to investigate the graduate outcomes of those who have successfully completed higher education. Retaining a focus on key disadvantaged groups, we analyse AGS data to determine the relationship between disadvantage and graduate outcomes. Our objective is to determine whether the disadvantage that impedes access to higher education and completion of higher education programmes continues to influence outcomes once they successfully graduate.

Project Method

This research combined large-scale quantitative data with in-depth qualitative data to create a unique and nuanced understanding of the relationship between equity and graduate outcomes. The research utilised quantitative data from the Australian Graduate Survey (AGS) in 2014, comprising the Graduate Destinations Survey and the Course Experience Questionnaire. Analysis of AGS data identified the graduate outcomes of students from disadvantaged backgrounds. The graduate outcomes of all six official equity groups were analysed.

In-depth, qualitative data collected under an OLT Commissioned project into graduate employability (Bennett et al., 2014-2015) was also analysed to provide greater specificity about both the experience of current higher education students in enhancing their employability and the insights of graduates into navigating the world of work. This further developed the themes which arose from the quantitative analysis.

Pertinent graduate outcomes included employment outcomes and further study. For employment outcomes, the research team looked at characteristics such as type of employment, salary, location of employment and relationship to degree programme. To contextualise outcomes by field of education, the team considered a range of variables including campus location, demographic characteristics and enrolment characteristics. To enable comparative analysis, data was analysed both for the whole of Australia and by State and Territory.

Research questions

This research sought to answer four research questions and inform institutional support strategies for students from disadvantaged backgrounds.

1. To what extent do higher education outcomes differ between students from disadvantaged and non-disadvantaged backgrounds?
2. Which variables were associated with graduate outcomes that were better, or worse, than those for graduates on average?
3. How do graduate outcomes for higher education students from disadvantaged backgrounds vary by key contextual factors, including location and field of study?
4. What other key factors are most strongly related to graduate outcomes for higher education students from disadvantaged backgrounds?

Research population

The total population for the quantitative analysis is taken from the 2014 Australian Graduate Survey (AGS) and totals 142,647 graduates. There were a number of overlapping categories in AGS data. For example students may be simultaneously working full time, studying part time, self-employed and searching for work. Due to the complexity this creates, and to aid analysis, student outcomes were placed in discrete categories as indicated at

Table 1.

Table 1: Outcome categories for individual graduates in AGS dataset

Category	Definition	n	%
Working full time	Either working or had accepted an offer of work for 35 hours per week or more, may or may not also be studying part time	57,892	40.6
Working part time	Either working or had accepted an offer of work for less than 35 hours per week, may or may not also be studying part time	30,285	21.2
Self-employed	Self-employed (either part or full time), may or may not also be studying part-time	5,142	3.6
Studying	Studying full time, may or may not also be working	26,498	18.6
Neither working nor studying*	Not studying (either full time or part time) or working (either full time or part time)	21,095	14.8
Missing	No information given on outcomes	1,735	1.2
Total		142,647	100

*Of those who were neither working nor studying, 13,031 (61.8 per cent) report that they were seeking work but a further 8,064 gave no indication of their activities.

It is important to note that none of these categories exclude work seeking. Indeed, a proportion of graduates from all of the five categories above reported that they were seeking work.

Variables for data analysis

Data analysis focused on the graduate outcomes of those from disadvantaged backgrounds. 'Disadvantage' was theorised as constituting several independent, but potentially overlapping, characteristics:

- **Indigenous** - Graduates who self-identify as Aboriginal or Torres Straits Islanders.
- **Disability** - Graduates who self-identify as having a disability (the nature or severity of the disability is not defined).
- **NESB** - Graduates who self-identify as speaking a language other than English as their first language.
- **Overseas-born** – Graduates who report having been born in a country other than Australia.
- **Regional** – Graduates who report living in a regional area of Australia (with 'regional' defined as outside the capital city of any state or territory).
- **Low SES** – Graduates whose reported home postcode is classified as in the bottom quartile of SES, based on the Australian Bureau of Statistics' Socio-Economic indexes for areas (SEIFA) data cube as per 28 March 2013.
- **Female** – graduates who self-identify as female were not considered disadvantaged as a group but this research paid particular attention to female graduates from traditionally male-dominated disciplines.

For each of these groups, and for the population overall, analysis of graduate outcomes considered a number of factors including whether graduates were working full time, part time or self-employed and whether they were studying. A further area of analysis concerned factors related to aspects of respondents' education such as educational level and discipline. The field of analysis of relevance for this report is summarised at Table 2.

Table 2: Pertinent characteristics included in AGS data analysis

Demographics	Educational characteristics	Outcome characteristics
Socio-economic status	Institution type / group	Paid work status
Indigenous status	Institution location	Seeking work status
Disability status	Field of education	Employer characteristics
Language background	Mode of attendance – FT/PT	Location of employment
Place of birth	Satisfaction with quality of course	Employment characteristics
Gender	Strategies to enhance employability during study	Employment requirements
Age	Employment during final year of study	Job search strategies
Highest previous qualification	Fees paid	Further study status
		Relationship of further study to previous degree

One of the areas of interest for analysis concerned strategies to enhance employability. For analysis purposes the Generic Skills Scale and Graduate Qualities Scale were used. The scales are mean scores for a number of individual survey items included in the AGS. These are shown at Table 3.

Table 3: Generic Skills and Graduate Qualities Scales

Generic Skills Scale – mean score for six survey items	The course helped me develop my ability to work as a team member The course sharpened my analytic skills The course developed my problem-solving skills The course improved my skills in written communication As a result of my course, I feel confident about tackling unfamiliar problems My course helped me to develop the ability to plan my own work
Graduate qualities scale – mean score for six survey items	The course provided me with a broad overview of my field of knowledge The course developed my confidence to investigate new ideas University stimulated my enthusiasm for further learning I learned to apply principles from this course to new situations I consider what I learned valuable for my future My university experience encouraged me to value perspectives other than my own

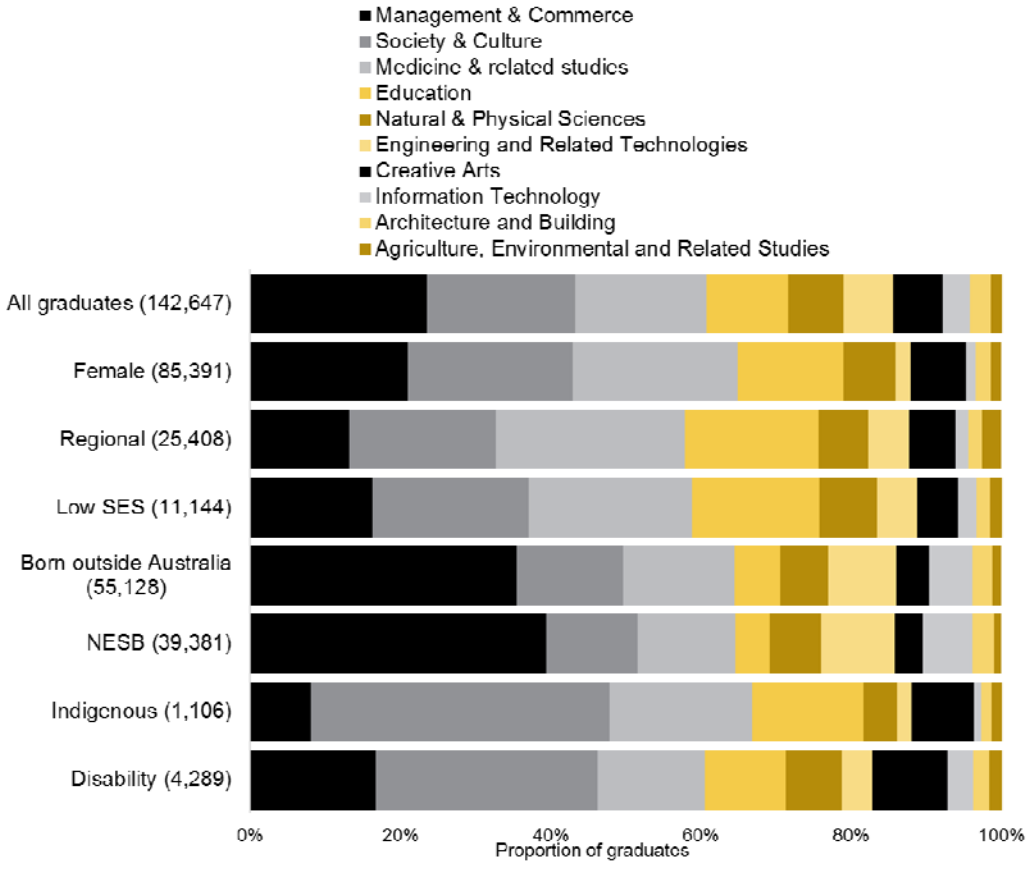
The context

Policy makers have long striven to encourage the participation of students from disadvantaged backgrounds. While disadvantaged students are now more present in higher education, it is important to begin this report with a summary of participation patterns.

First, disadvantaged students tend to be clustered in particular disciplinary areas. Shown at Figure 3 the field of education distributions for a range of disadvantaged groups in the Australian Graduate Survey were compared with those of all graduates. For clarity, only the ten most common fields of education are shown. Key findings include:

- 42.9 per cent of graduates from regional areas and 38.7 per cent of low SES graduates were in the fields of *medicine and related studies* and *education*, in contrast to 28.3 per cent of all graduates.
- 39.8 per cent of Indigenous graduates and 29.6 per cent of graduates with a disability were in the field of *society and culture*, in contrast to 19.6 per cent of all graduates.
- 44.6 per cent of graduates born outside Australia and 49.3 per cent of NESB graduates were in the fields of *management and commerce* and *engineering and related technologies*, in contrast to 30.2 per cent of all graduates.
- Just 3.2 per cent of female graduates were in the fields of *engineering and related technologies* and *information technology*, in contrast to 10.2 per cent of all graduates.

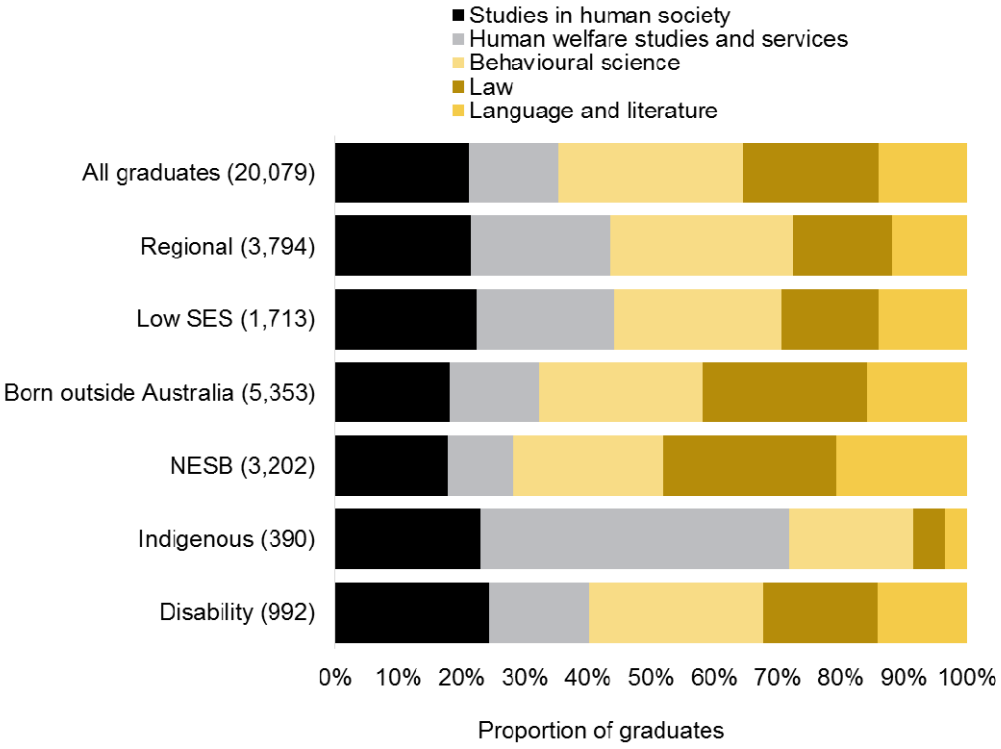
Figure 3: Distribution of disadvantaged graduates within all broad fields of education (n=142,647)



Beyond the breadth of the broad field of education categories, further nuances can be seen, particularly in the broad areas of *medicine and related studies* and *society and culture*. Figure 4 shows the breakdown of *society and culture* graduates into five narrow discipline areas. Key findings include:

- 48.7 per cent of Indigenous graduates, 22.0 per cent of graduates from regional areas and 21.8 per cent of low SES graduates were from the field of *human welfare studies and services* in contrast to just 14.1 per cent of all graduates.
- 4.9 per cent of Indigenous graduates were from the field of *law*, in contrast to 21.5 per cent of all graduates.
- 20.7 per cent of NESB graduates were from the field of *language and literature* in contrast to 14 per cent of all graduates and just 3.6 per cent of Indigenous graduates.
- 27.4 per cent of NESB graduates and 26.1 per cent of graduates born outside Australia were from the field of *law* in contrast to 21.5 per cent of all graduates.
- 19.7 per cent of Indigenous graduates were from the field of *behavioural science* in contrast to 29.2 per cent of all graduates.

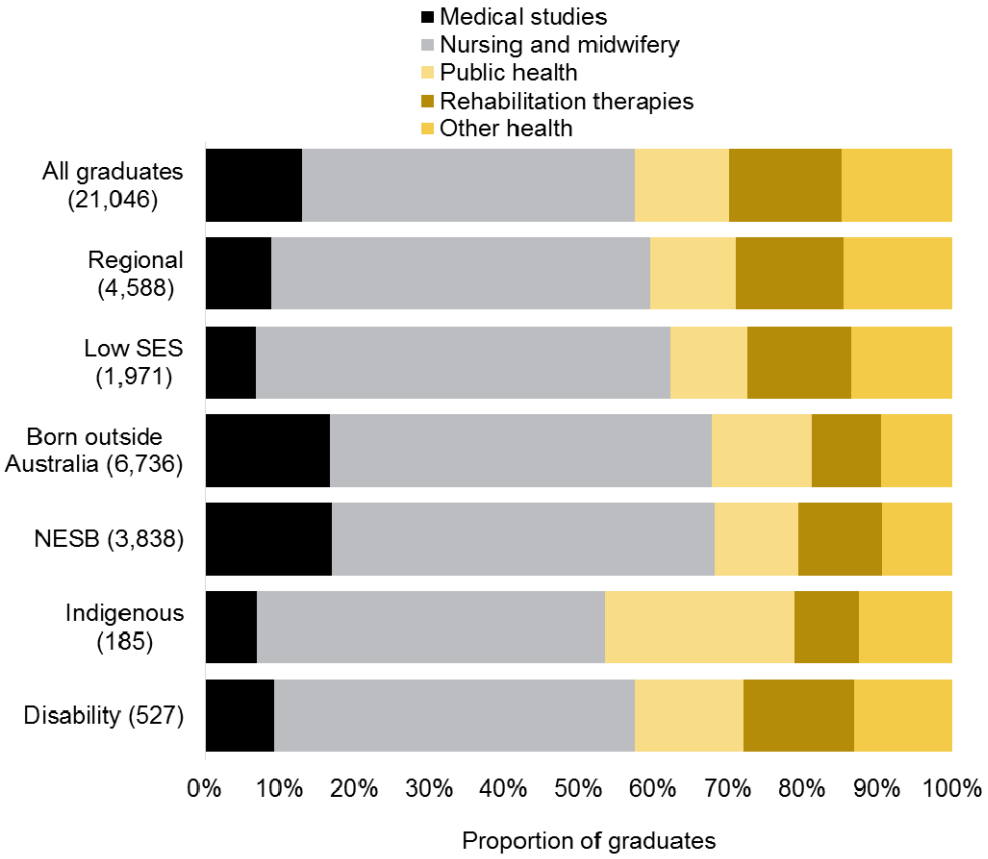
Figure 4: Distribution of disadvantaged graduates within field of society and culture (n=20,079)



The concentration of graduates from many disadvantaged groups within the sub-fields of broad disciplines that might be regarded as lower status (and which are less well renumerated) can also be seen within the broad field of *medicine and related studies*, as Figure 5 shows. Key findings include:

- 13 per cent of all graduates were from the field of *medical studies* but this was the case for just 7 per cent of Indigenous graduates, 6.8 per cent of low SES graduates, 9.0 per cent of regional graduates and 9.3 per cent of graduates with a disability.
- 17 per cent of NESB graduates and 16.7 per cent of graduates born outside Australia were from the field of *medical studies* in comparison to 13.0 per cent of all graduates.
- More than 50 per cent of NESB graduates, low SES graduates, regional graduates and graduates born outside Australia were in the field of *nursing and midwifery*, compared to 44.6 per cent of all graduates.
- 25.4 per cent of Indigenous graduates were from the field of *public health* in comparison to 12.7 per cent of all graduates.
- Just 8.6 per cent of Indigenous graduates and 9.2 per cent of graduates born outside Australia were from the field of *rehabilitation therapies* in comparison to 14.9 per cent of all graduates.

Figure 5: Distribution of disadvantaged graduates within field of medicine and related studies (n=21,046)



The research team was mindful that data must be critically interpreted, taking into account the nuanced outcomes of different cohorts within each of disadvantaged group. As such, establishing these patterns was important in setting the scene for the rest of this report.

Overall AGS population – key predictors of employment

The 2014 AGS contains data collected from 142,647 graduates and key population demographic characteristics, educational characteristics and education outcomes are provided at Appendix A. In each section we present an introduction followed by a summary of the findings, and then we present the findings in detail.

All graduates

The starting point for our analysis was to look at which factors are important in predicting whether or not graduates were working at the time of the graduate destination survey (four to six months after completion). This is not to say that employment is the optimum graduate outcome – indeed, as we have seen, many graduates were engaged in further study. However, taking into account the importance attached to statistics on graduate employment by institutions and policy makers, this was a pertinent place to begin.

Summary of key findings from the all graduates

The most important predictor of graduate employment was working in the final year, with graduates who undertook paid work in their final year 12 times more likely to be employed than those who did not. Female graduates (compared to male graduates) and graduate aged over 23 (compared to younger graduates) were more likely to be employed. Graduates with a disability, Indigenous graduates, low SES graduates, NESB graduates and graduates born outside Australia were all less likely to be employed than their counterparts. There were also differences in employment rates across states, types of institutions, disciplinary areas and mode of study.

Initial analysis focused on the full data set of graduates, using two regression models to consider factors that predict graduates being employed (with employment classified as full time, part time or self-employed).

In order to estimate the probability that graduates were working, a binomial logistic regression was first conducted. The probability of working was estimated using demographic factors, educational factors and educational experience factors:

- Demographic – Age, gender, disability, Indigenous status, first language, place of birth, SES, state of residence, place of residence (metropolitan-regional).
- Educational – Institution group, institution location (metropolitan-regional), level of study, broad field of education, mode of study, type of fees paid.
- Educational experience – Satisfaction, generic skills, graduate qualities, work during final year of study.

Probability of graduates working, determined by demographic factors

The omnibus model for the logistic regression analysis with demographic factors was statistically significant but did not provide a good fit to the data[i]. The model explained 4.2 per cent of variance in working status and was 82.4 per cent accurate in its prediction of whether graduates were working. The key findings from this analysis were as follows:

- Female graduates were 1.2 times more likely than male graduates to be working.
- Graduates aged 23 to 25, 26 to 32 and 33 or over were 1.3, 1.6 and 1.6 times, respectively, more likely than graduates aged 22 or under to be working.
- Graduates with a disability were 0.6 times less likely than graduates without a disability to be working.
- Indigenous graduates were 0.3 times less likely than non-Indigenous graduates to be working.
- Graduates from the top three SES quartiles were around 1.2 times more likely than those from the bottom SES quartile to be working
- English speaking graduates were 1.6 times more likely than NESB graduates to be working.
- Graduates born outside Australia were 0.3 times less likely than those born in Australia to be working.
- Graduates from the Northern Territory and the Australian Capital Territory were 1.5 and 1.2 times, respectively, more likely than those from New South Wales to be working.
- Graduates from Victoria, Queensland, Western Australia and Tasmania were less likely than graduates from New South Wales to be working.

Probability of graduates working, determined by educational factors

The omnibus model for the logistic regression analysis with educational factors was statistically significant but did not provide a good fit to the data[ii]. The model explained 9.9 per cent of variance in working and was 81.8 per cent accurate in its prediction of whether graduates were working. The key findings from this analysis were as follows:

- Graduates from ATN institutions were more likely than graduates from GO8 institutions to be working while graduates from IRUA and RUN institutions were less likely than graduates from GO8 institutions to be working.
- Graduates from regional institutions were 1.3 times more likely than graduates from metropolitan institutions to be working.
- Graduates from bachelor degrees with honours, advanced diplomas and associate degrees were less likely than graduates from standard bachelor degrees to be working.

- Graduates from graduate certificates, graduate entry bachelor degrees, master's degrees by coursework and doctorates by research were more likely than graduates from standard bachelor's degrees to be working.

- Graduates from all disciplinary areas were more likely than graduates from *natural and physical science* degrees to be working. For example, graduates from *medicine and related studies* or *education* degrees were 3.5 and 3.3 times, respectively, more likely than graduates from *natural and physical science* degrees to be working.

- Graduates who had attended university by external or mixed mode were more likely than those who had studied on campus to be working.

- Graduates who had paid international student fees were less likely than those who had paid HECS fees upfront to be working whereas graduates who had paid Australian student fees were more likely than those who had paid HECS fees upfront.to be working.

Probability of graduates working, determined by educational experience factors

The omnibus model for the logistic regression analysis with educational experience factors was statistically significant but did not provide a good fit to the data.[iii] The model explained 33.1% of variance in working and was 85.7 per cent accurate in its prediction of whether graduates were working. The key finding is that undertaking paid work in the final year of study increased the likelihood that a graduate was working by 11.7 times.

Comparative predictions for all outcomes

What the analysis above cannot tell us is the power of predictions for different kinds of work or for outcomes other than working: for example, undertaking further study. Therefore, the binomial logistic regression was followed by a multinomial logistic regression. In this case the dependent variable was all the outcomes specified at

Table 1. The model included demographic, educational and educational experience variables. The likelihood of four outcomes – being in full time work, being in part time work, being self-employed and studying were compared to neither working nor studying.

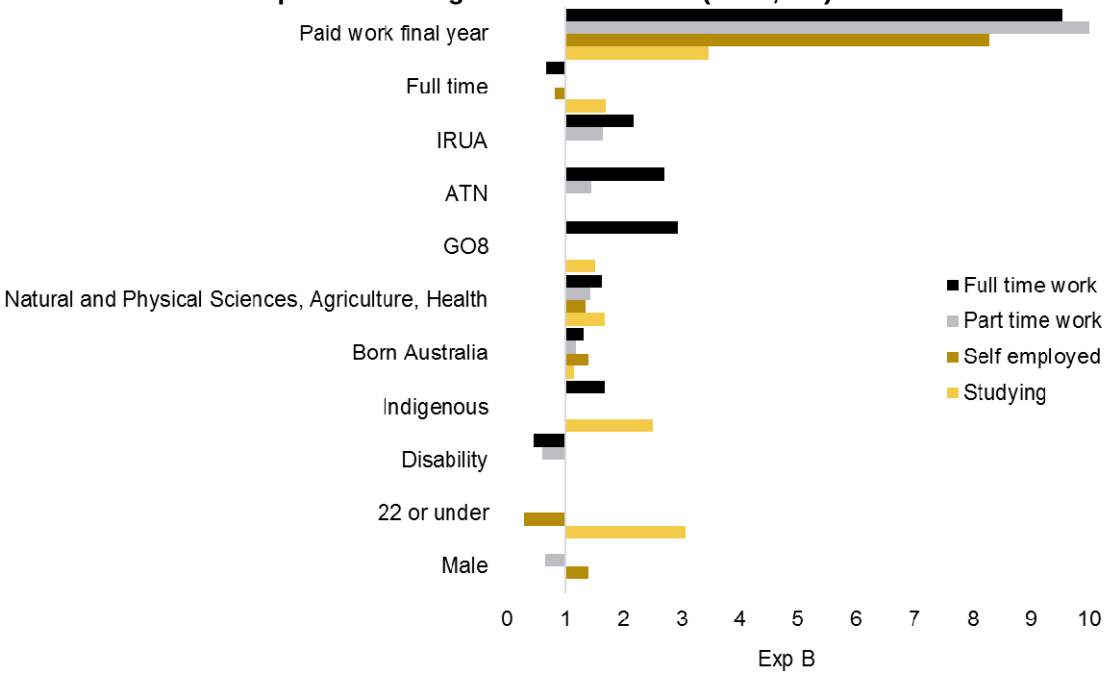
Figure 6 shows the odds ratios. Any odds ratios that were not statistically significant have been omitted, as have those that were extremely small (where ExpB is between 1-1.3 or between 0.99 and 0.50). Figure 6 indicates the variation in the likelihood of an outcome other than full time employment. A ratio greater than 1 indicates greater likelihood of an outcome other than neither working nor studying. A ratio less than 1 indicates less likelihood of an outcome other than neither working nor studying. Key findings were:

- Graduates who undertook paid work in their final year of study were more likely than graduates who did not undertake paid work in their final year of study to be in full time work, part time work, self-employed or studying than neither working nor studying by factors of 9.6, 9.9, 8.3 and 3.5 respectively.

- Indigenous graduates were more likely than non-Indigenous graduates to be studying or working full time than neither working nor studying by factors of 2.5 and 1.7 respectively.

- Graduates with a disability were less likely than graduates without a disability to be in full time work or part time work than neither working nor studying.
- Graduates born in Australia were more likely than graduates born outside Australia to be doing all activities than neither working nor studying.
- Male graduates were more likely than female graduates to be self-employed by a factor of 1.4, but were less likely to be in part time work.
- Graduates aged 22 or under were more likely than graduates aged 33 or above to be studying than neither working nor studying by a factor of 3.1, but were less likely to be self-employed.
- Graduates from the fields of *natural and physical sciences*, *agriculture* and *health* were more likely than graduates from the fields of *social sciences*, *humanities*, *arts* and *education* to be doing all activities by factors between 1.4 and 1.7.
- Graduates who had studied full time were more likely than graduates who had studied part time to be studying by a factor of 1.7.
- Graduates who attended GO8, ATN or IRUA institutions were more likely than graduates who attended RUN institutions to be in full time work than neither working nor studying by factors of 2.9, 2.7 and 2.2 respectively.
- Graduates who attended GO8 institutions were more likely than graduates who attended RUN institutions to be studying than neither working nor studying by a factor of 1.5.
- Graduates who attended IRUA or ATN institutions were more likely than graduates who attended RUN institutions to be in part time work than neither working nor studying by factors of 1.7 and 1.5 respectively.

Figure 6: Odds ratios for predictors of graduate outcomes (n=68,416)



Indigenous graduates

This section of the report focuses on the employment outcomes of Indigenous graduates – respondents who self-identified as Indigenous in the Australian Graduate Survey (a total population of 1,106). The first analysis undertaken was a binomial logistic regression to ascertain the effects of different factors on the likelihood that Indigenous graduates were working or not working. This was run three times with the same three sets of factors as highlighted above: demographic factors, educational factors and educational experience factors. Reported here were those patterns that had statistical significance.

Summary of key findings from the Indigenous cohort

Indigenous graduates who had undertaken paid work in their final year of study were 28 times more likely to be working than those who had not done so. Indigenous graduates who were female (compared to male), from *medicine and related studies* (compared to *natural and physical sciences*), and who studied by a mixed mode (compared to on-campus) were more likely to be working. Indigenous graduates with a disability were less likely to be working than Indigenous graduates who did not have a disability and Indigenous graduates from the bottom SES quartile were less likely to be working than Indigenous graduates from the top two SES quartiles.

The omnibus model for the logistic regression analysis with demographic factors was statistically significant[iv]. The model explained 5.9 per cent of variance in working and was 80.7 per cent accurate in its prediction of whether Indigenous graduates were working. Key findings were:

- Female Indigenous graduates were 1.4 times more likely than male Indigenous graduates to be working.
- Indigenous graduates with a disability were 0.5 times less likely than Indigenous graduates who did not have a disability to be working.
- Indigenous graduates from the top and second-top SES quartiles were 1.9 and 1.7 times, respectively, more likely than Indigenous graduates from the bottom SES quartile to be working.
- Indigenous graduates in Queensland were 0.5 times less likely than Indigenous graduates in New South Wales to be working.

The omnibus model for the logistic regression analysis with educational factors was statistically significant.[v] The model explained 21.8 per cent of variance in working and was 80 per cent accurate in its prediction of whether Indigenous graduates were working. Key findings were:

- Indigenous graduates from *medicine and related studies* were 4.6 times more likely than Indigenous graduates from *natural and physical sciences* to be working.
- Indigenous graduates who had studied by a mixed mode were 2.5 times more likely than Indigenous graduates who had studied on campus to be working.

- Indigenous graduates who had deferred HECS were 0.6 times less likely than those who had paid HECS upfront to be working.

The omnibus model for the logistic regression analysis with educational experience factors was statistically significant.[vi] The model explained 53 per cent of variance in working and was 87.5 per cent accurate in its prediction of whether Indigenous graduates were working. The key finding is that Indigenous graduates who had undertaken paid work in their final year of study were 27.7 times more likely to be working than those who had not done so.

A multinomial logistic regression was conducted which examined the combined impact of demographic variables, educational variables and educational experience variables on the likelihood of four outcomes – being in full time work, being in part time work, being self-employed and studying - compared to neither working nor studying.

Figure 7 shows the odds ratios for the demographic and educational predictors for the outcomes of Indigenous graduates. In this model graduate qualities were excluded as they were causing irregularities in the output. Any odds ratios that were not statistically significant have been omitted. Key findings include:

- Indigenous graduates who undertook paid work in their final year of study were more likely than Indigenous graduates who did not undertake paid work in their final year of study to be in full time work, part time work, self-employed or studying than neither working nor studying by factors of 13.4, 13.9, 14.9 and 4.2 respectively.

- Indigenous graduates aged 23 to 25 were more likely than Indigenous graduates aged 33 or over to be working full time than neither working nor studying by a factor of 2.9.

- Indigenous graduates who studied full time were less likely than Indigenous graduates who studied part time to be in full time work, in part time work or self-employed than neither working nor studying.

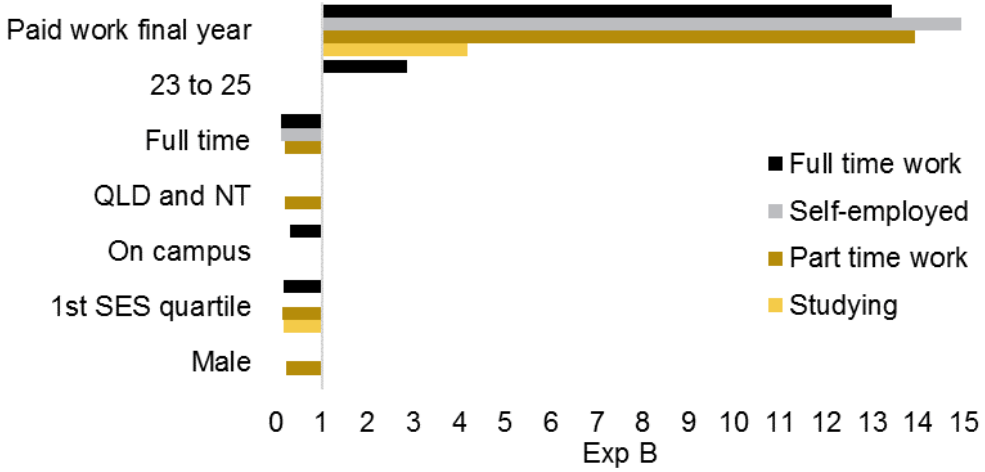
- Indigenous graduates in Queensland and the Northern Territory were less likely than Indigenous graduates in South Australia and Western Australia to be working part time than neither working nor studying.

- Indigenous graduates who studied on campus were less likely than Indigenous graduates who studied via a mixed mode to be in full time work than neither working nor studying.

- Indigenous graduates from the lowest SES quartile were less likely than Indigenous graduates from the top SES quintile to be in full time work, part time work or studying than neither working nor studying than.

- Male Indigenous graduates were less likely than female Indigenous graduates to be in part time work than neither working nor studying.

Figure 7: Odds ratios for demographic and educational predictors of Indigenous graduate outcomes (n=489)



Graduates with a disability

This section of the report focuses on the employment outcomes of graduates with a disability – all those who self-identified as having a disability in the Australian Graduate Survey (a total population of 4,229). The first analysis undertaken was a binomial logistic regression to ascertain the effects of different factors on the likelihood that graduates with a disability were working or not working. This was run three times with the same three sets of factors as highlighted previously: demographic factors, educational factors and educational experience factors. Reported here were those patterns with statistical significance.

Summary of key findings from the cohort of graduates with a disability

Graduates with a disability who worked in their final year of study were 16 times more likely to be working than those who did not. Graduates with a disability who were female, from the top two SES quartiles, born in Australia and spoke English at home were more likely to be working than their counterparts. Graduates with a disability from GO8 institutions (compared to RUN institutions), with master's degrees by coursework (compared to standard bachelor degrees), in the fields of *medicine and related studies*, *education* or *management and commerce* (compared to *natural and physical sciences*) and who studied via distance mode (compared to on campus) were more likely to be working.

The omnibus model for the logistic regression analysis with demographic factors was statistically significant.[vii] The model explained 4.8 per cent of variance in working and was 68.1 per cent accurate in its prediction of whether Graduates with a disability were working. Key findings were:

- Graduates with a disability from the 3rd and 4th SES quartiles were 1.4 times more likely than graduates with a disability from the bottom SES quartile to be working.
- Female Graduates with a disability were 1.3 times more likely than male graduates with a disability.to be working

- Graduates with a disability aged 33 or over were 0.3 times less likely than graduates with a disability aged 22 or under to be working.
- Graduates with a disability who spoke English at home were 1.3 times more likely than graduates with a disability who spoke another language at home to be working.
- Graduates with a disability who were born outside Australia were 0.2 times less likely than graduates with a disability born in Australia to be working.
- Graduates with a disability from Victoria and Queensland were 0.3 times less likely than graduates with a disability from New South Wales to be working.
- Graduates with a disability from Tasmania were 0.6 times less likely than graduates with a disability from New South Wales to be working.

The omnibus model for the logistic regression analysis with educational factors was statistically significant.[viii] The model explained 15 per cent of variance in working and was 70.3 per cent accurate in its prediction of whether graduates with a disability were working. Key findings were that:

- Graduates with a disability from RUN institutions were 0.6 times less likely than graduates with a disability from GO8 institutions to be working.
- Graduates with a disability from master's degrees by coursework were 1.6 times more likely than graduates with a disability from standard bachelor degrees to be working.
- Graduates with a disability from the fields of *medicine and related studies*, *education* or *management and commerce* were 2.9, 3.1 and 1.8 times, respectively, more likely than graduates with a disability from the field of *natural and physical sciences* to be working.
- Graduates with a disability who studied via distance mode were 1.9 times more likely than graduates with a disability who studied on campus to be working.

The omnibus model for the logistic regression analysis with educational experience factors was statistically significant.[ix] The model explained 46.7% of variance in working and was 82.6 per cent accurate in its prediction of whether Graduates with a disability were working. The key finding is that Graduates with a disability who worked in their final year of studies were 15.6 times more likely to be working than those who did not.

As before, the binomial logistic regression was followed by a multinomial logistic regression, which combined demographic variables, educational variables and educational experience variables as predictors of the likelihood of four outcomes – being in full time work, being in part time work, being self-employed and studying - compared to neither working nor studying.

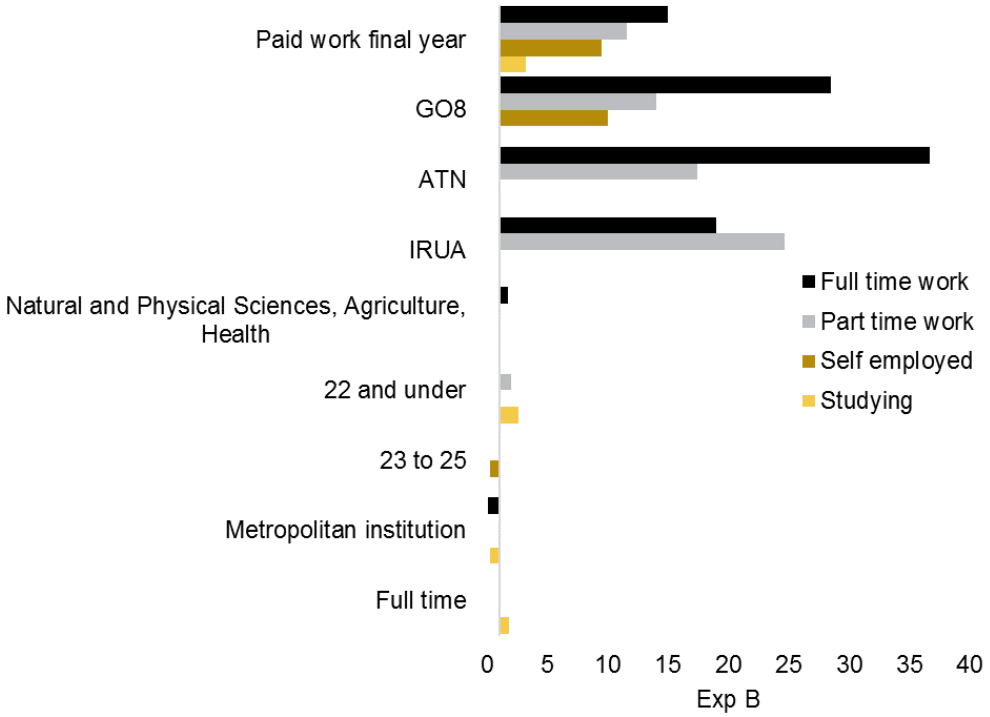
Figure 8 shows the odds ratios for the demographic and educational predictors for the outcomes of Graduates with a disability. Any odds ratios that were not statistically significant have been omitted. The key findings were:

- Graduates with a disability who undertook paid work in their final year of study were more likely than graduates with a disability who did not undertake paid work in their

final year to be in full time work, part time work, self-employed or studying than neither working nor studying by factors of 14.9, 11.6, 9.5 and 3.3 respectively.

- Graduates with a disability who studied at GO8, ATN and IRUA institutions were more likely than graduates with a disability who studied at RUN institutions to be working full time or part time than neither working nor studying by factors varying from 17.5 to 36.7.
- Graduates with a disability who studied at GO8 institutions were more likely than graduates with a disability from RUN institutions to be self-employed than neither working nor studying by a factor of 9.9.
- Graduates with a disability from the fields of *natural and physical sciences, agriculture* and *health* were more likely than graduates with a disability from the fields of *social sciences, humanities, arts* and *education* to be working part time than neither working nor studying by a factor of 1.8.
- Graduates with a disability who studied full time were more likely than graduates with a disability who studied part time to be studying than neither working nor studying by a factor of 1.8.
- Graduates with a disability aged 22 or under were more likely than graduates with a disability aged 33 or over to be in part time work or studying than neither working nor studying by factors of 2.0 and 2.6.
- Graduates with a disability aged 23 to 25 were less likely than graduates with a disability aged 33 or over to be self-employed than neither working nor studying.
- Graduates with a disability who attended a metropolitan institution were less likely than graduates with a disability who attended a regional institution to be in full time work or studying than neither working nor studying.

Figure 8: Odds ratios for demographic and educational predictors of outcomes for graduates with a disability (n=4,291)



Regional graduates

This section of the report focuses on the employment outcomes of graduates from regional areas of Australia – all those identified that they did not live in a metropolitan area in the Australian Graduate Survey (a total population of 25,240). The first analysis undertaken was a binomial logistic regression to ascertain the effects of different factors on the likelihood that regional graduates were working or not working. This was run three times with the same three sets of factors as highlighted previously: demographic factors, educational factors and educational experience factors. Only those patterns which were statistically significant were mentioned.

Summary of key findings from the regional cohort

Regional graduates who worked in their final year of studies were 10 times more likely to be working than regional graduates who did not. Regional graduates who were male, aged 22 or under, did not speak English at home, were Indigenous, born overseas or had a disability were less likely to be working than their counterparts. Regional graduates who attended regional institutions, who studied by distance or mixed mode and were from fields of education other than natural and physical sciences were more likely to be employed than their regional counterparts.

The omnibus model for the logistic regression analysis with demographic factors was statistically significant but did not provide a good fit to the data.[x] The model explained 3.1% of variance in working and was 84.2 per cent accurate in its prediction of whether regional graduates were working. Key findings were that:

- Regional graduates aged 23 to 25, 26 to 32 or 33 or over were 1.4 to 1.7 times more likely than regional graduates aged 22 or under to be working.
- Female regional graduates were 1.2 times more likely than male regional graduates to be working.
- Regional graduates who spoke English at home were 1.4 times more likely than regional graduates who spoke another language at home to be working.
- Regional graduates who were born overseas were 0.3 times less likely than regional graduates born in Australia to be working.
- Regional graduates who had a disability were 0.7 times less likely than regional graduates who did not have a disability to be working.
- Regional graduates who were Indigenous were 0.3 times less likely than regional graduates who were not Indigenous to be working.
- Regional graduates from the Northern Territory were 2.4 times more likely than regional graduates from New South Wales to be working.
- Regional graduates from Tasmania were 0.3 times less likely than those from New South Wales to be working.

The omnibus model for the logistic regression analysis with educational factors was statistically significant but did not provide a good fit to the data.[xi] The model explained 12.7% of variance in working and was 84.4 per cent accurate in its prediction of whether regional graduates were working. Key findings were:

- Regional graduates who attended ATN institutions were 1.2 times more likely than regional graduates who attended GO8 institutions to be working.
- Regional graduates who attended RUN institutions were 0.3 times less likely than regional graduates who attended GO8 institutions to be working.
- Regional graduates who attended regional institutions were 1.5 times more likely than regional graduates who attended metropolitan institutions to be working.
- Regional graduates who completed graduate certificates, masters by coursework or associate degrees were 2.1, 1.7 and 1.7 times, respectively, more likely than regional graduates who completed standard bachelor degrees to be working.
- Regional graduates who completed advanced diplomas or diplomas were 0.4 times less likely than regional graduates who completed standard bachelor's degrees.to be working.
- Regional graduates from six broad fields of education were more likely than regional graduates from the field of *natural and physical sciences* to be working. For example, regional graduates from the fields of *medicine and related studies* and *education* were 3.8 and 3.6 times, respectively, more likely than regional graduates from the field of *natural and physical sciences* to be working.

- Regional graduates who studied by distance or mixed mode were more likely than regional graduates who studied on campus to be working.

The omnibus model for the logistic regression analysis with educational experience factors was statistically significant.[xii] The model explained 33.9% of variance in working and was 87.3 per cent accurate in its prediction of whether regional graduates were working. The key finding is that regional graduates who worked in their final year of studies were 10.0 times more likely to be working than those who did not.

As before, the binomial logistic regression was followed by a multinomial logistic regression examining demographic, educational and educational experience variables on the likelihood of four outcomes – being in full time work, being in part time work, being self-employed or studying - compared to neither working nor studying.

Figure 9 shows the odds ratios for the demographic and educational predictors for the outcomes of regional graduates. Any odds ratios that were not statistically significant have been omitted. Key findings were that:

- Regional graduates who undertook paid work in their final year of study were more likely than regional graduates who did not undertake paid work in their final year of study to be in full time work, part time work, self-employed or studying than neither working nor studying by factors of 9.0, 8.7, 11.4 and 3.2 respectively.

- Regional graduates who were Indigenous were more likely than regional graduates who were not Indigenous to be studying than neither working nor studying by a factor of 2.4.

- Regional graduates who were male were 1.5 times more likely than regional graduates who were female to be self-employed than neither working nor studying, but were less likely to be in part time work.

- Regional graduates who were aged 32 or under were less likely than regional graduates who were aged 33 or over to be self-employed.

- Regional graduates who were aged 22 or under were more likely than regional graduates aged 33 or over to be studying than neither working nor studying by a factor of 2.4.

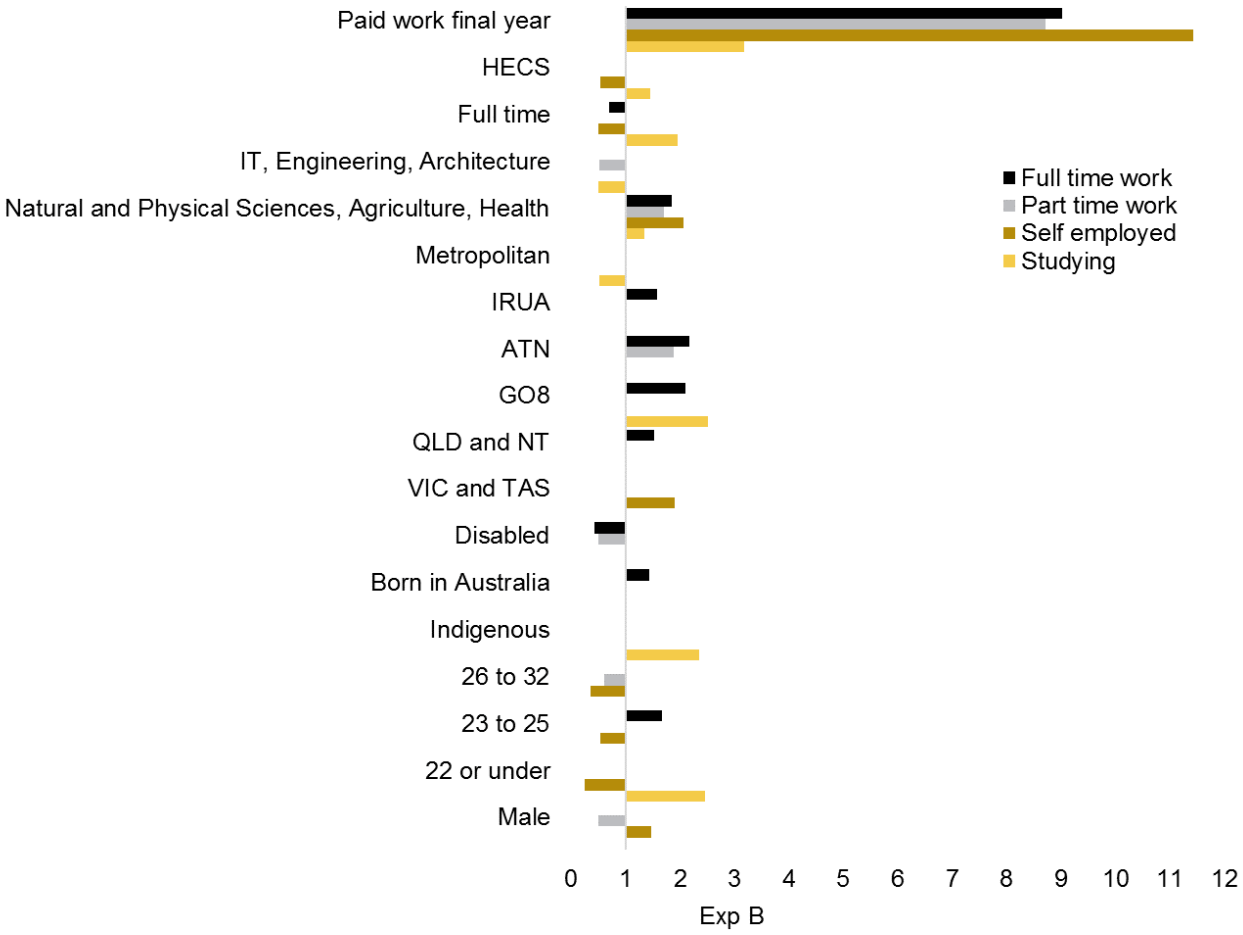
- Regional graduates who were born in Australia were more likely than regional graduates who were born outside Australia to be working full time than neither working nor studying by a factor of 1.4.

- Regional graduates with a disability were less likely than regional graduates without a disability Australia to be working full time or working part time than neither working nor studying by a factor of 0.5.

- Regional graduates in Victoria and Tasmania were more likely than regional graduates in South Australia or Western Australia to be self-employed than neither working nor studying by a factor of 1.9.

- Regional graduates in Queensland and the Northern Territory were more likely than regional graduates in South Australia or Western Australia to be working full time than neither working nor studying by a factor of 1.5.
- Regional graduates who studied at a GO8, ATN or IRUA institution were more likely than regional graduates who studied at a RUN institution to be in full time work than neither working nor studying by factors of 2.1, 2.2 and 1.6 respectively.
- Regional graduates who studied at a GO8, ATN or IRUA institution were more likely than regional graduates who studied at a RUN institution to be in part time work than neither working nor studying by factors of 1.6, 1.9 and 1.6 respectively.
- Regional graduates who studied at a GO8 institution were more likely than regional graduates who studied at a RUN institution to be studying than neither working nor studying by a factor of 2.5.
- Regional graduates who studied at an ATN institution were more likely than regional graduates who studied at a RUN institution to be working part time than neither working nor studying by a factor of 1.9.
- Regional graduates from the fields of *natural and physical sciences*, *medicine and related studies* or *agriculture* were more likely than regional graduates from the fields of *social sciences, humanities, arts* and *education* to be working full time, working part time, self-employed or studying by factors of 1.8, 1.7, 2.1 and 1.3 respectively.
- Regional graduates from the fields of *information technology*, engineering and *architecture* were less likely than regional graduates from the fields of *social sciences, humanities, arts* and *education* to be working part time or studying by a factor of 0.5.
- Regional graduates who studied full time were more likely than regional graduates who studied part time to be studying than neither working nor studying by a factor of 1.9, but were less likely to be self-employed or working full time.
- Regional graduates who paid fees via HECS were more likely than regional graduates who paid fees via other means to be studying than neither working nor studying by a factor of 1.5, but were less likely to be self-employed.

Figure 9: Odds ratios for demographic and educational predictors of regional graduate outcomes (n=25,424)


Paid work final year
HECS
Full time
IT, Engineering, Architecture
Natural and Physical Sciences, Agriculture, Health
Metropolitan
IRUA
ATN
GO8
QLD and NT
VIC and TAS
Disabled
Born in Australia
Indigenous
26 to 32
23 to 25
22 or under
Male
Full time work
Part time work
Self employed
Studying
0 1 2 3 4 5 6 7 8 9 10 11 12
Exp B

Non-English speaking graduates

This section of the report focuses on the employment outcomes of graduates who do not speak English at home (a total population of 39,408), hereafter known as students with a non-English speaking background (NESB). The first analysis undertaken was a binomial logistic regression to ascertain the effects of different factors on the likelihood that NESB graduates were working or not working. This was run three times with the three sets of factors highlighted previously: demographic factors, educational factors and educational experience factors. Reported here were those patterns with statistical significance.

Summary of key findings from the NESB cohort

NESB graduates who undertook paid work in the final year of their degree were 12 times more likely to be working than NESB graduates who did not work. NESB graduates who were female, aged 23 or over, from the top three SES quartiles, who attended regional institutions, who studied areas other than *natural and physical sciences* and who studied via distance or mixed modes were more likely to be working than their counterparts. NESB graduates who were born overseas or had a disability were less likely to be employed.

The omnibus model for the logistic regression analysis with demographic factors was statistically significant but did not provide a good fit to the data.[xiii] The model explained 3.1% of variance in working and was 73.0 per cent accurate in its prediction of whether NESB graduates were working. Key findings were:

- Female NESB graduates were 1.1 times more likely than male NESB graduates to be working.
- NESB graduates aged 23 to 25, 26 to 32 and 33 or over were 1.4, 1.9 and 2.1 times, respectively, more likely than NESB graduates aged 22 or under to be working.
- NESB graduates from the top three SES quartiles were 1.2 times more likely to be working than NESB graduates from the bottom SES quartile.
- NESB graduates who were born overseas were 0.3 times less likely than NESB graduates who were born in Australia to be working.
- NESB graduates with a disability were 0.5 times less likely than NESB graduates who did not have a disability to be working.
- NESB graduates from Victoria, South Australia and Tasmania were less likely than NESB graduates from New South Wales to be working.
- NESB graduates from regional areas were less likely to be working than NESB graduates from metropolitan areas.

The omnibus model for the logistic regression analysis with educational factors was statistically significant but did not provide a good fit to the data.[xiv] The model explained 8.7 per cent of variance in working and was 83.7 per cent accurate in its prediction of whether NESB graduates were working. Key findings were:

- NESB graduates who gained graduate certificates, graduate entry bachelor degrees, masters degrees by coursework or doctorates by research were more likely than NESB graduates who gained standard bachelor degrees to be working.
- NESB graduates who gained bachelor's degrees with honours, advanced diplomas or diplomas degrees were less likely than NESB graduates who gained standard bachelor degrees to be working.
- NESB graduates from all other areas of study were more likely than NESB graduates from *natural and physical sciences* to be working.
- NESB graduates who studied via distance or mixed modes were more likely than NESB graduates who studied on campus to be working.
- NESB graduates who paid international student fees were less likely than NESB graduates who paid HECS fees upfront.to be working
- NESB graduates who attended regional institutions were 1.3 times more likely than NESB graduates who attended metropolitan institutions to be working.

The omnibus model for the logistic regression analysis with educational experience factors was statistically significant but did not provide a good fit to the data.[xv] The model explained 30.7% of variance in working and was 86.7 per cent accurate in its prediction of whether NESB graduates were working. The key finding is that NESB graduates who undertook paid work in the final year of their degree were 11.6 times more likely to be working than NESB graduates who did not work.

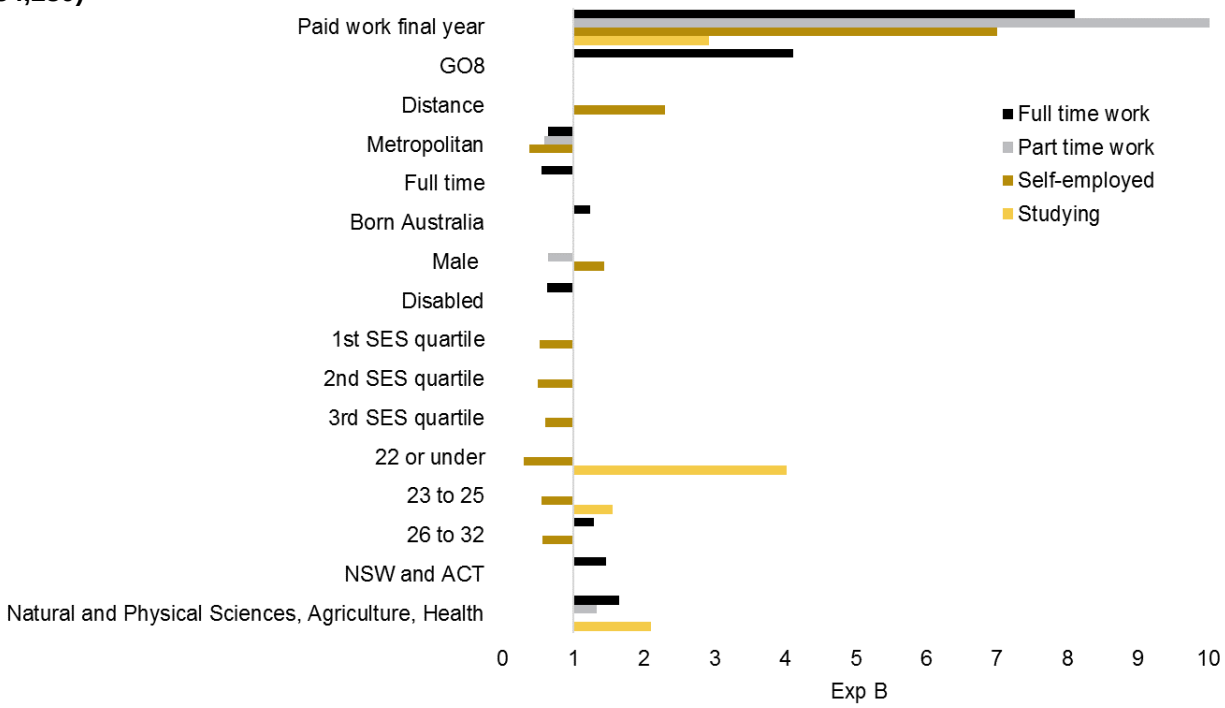
As before, the binomial logistic regression was followed by a multinomial logistic regression, with the dependent variables of all the outcomes specified previously. In this model the category of Indigenous was omitted as it caused irregularities in the output.

Figure 10 shows the odds ratios for the demographic and educational predictors for the outcomes of NESB graduates. Any odds ratios that were not statistically significant have been omitted. Key findings were:

- NESB graduates who undertook paid work in their final year of study were more likely than NESB graduates who did not undertake paid work to be in full time work, part time work, self-employed or studying than neither working nor studying by factors of 8.1, 12.2, 7.0 and 2.9 respectively.
- NESB graduates who attended GO8 institutions were more likely than NESB graduates who attended RUN institutions to be in full time work than neither working nor studying by a factor of 4.1.
- NESB graduates who studied by distance mode were more likely than NESB graduates who studied via mixed mode to be self-employed than neither working nor studying by a factor of 2.1.
- NESB graduates aged 22 or under or 23 to 25 were more likely than NESB graduates aged 33 or over to be studying than neither working nor studying by factors of 4.0 and 1.5.
- NESB graduates aged 32 or under were less likely than NESB graduates aged 33 or over to be self-employed than neither working nor studying.
- NESB graduates aged 26 to 32 were more likely to be working full time than neither working nor studying than NESB graduates aged 33 or over.
- NESB graduates with a disability were less likely than NESB graduates who did not have a disability to be working full time than neither working nor studying.
- Male NESB graduates were more likely than female NESB graduates to be self-employed but less likely to be working part time than neither working nor studying.
- NESB graduates born in Australia were more likely than NESB graduates born overseas to be in full time work than neither working nor studying by a factor of 1.2.
- NESB graduates from New South Wales and the Australian Capital Territory were more likely than NESB graduates from South Australia and Western Australia to be working full time than neither working nor studying by a factor of 1.5.
- NESB graduates from the fields of *natural and physical sciences*, *agriculture* or *health* were more likely than NESB graduates from the fields of *social sciences, humanities, arts* and *education* to be in full time work, in part time work or studying than neither working nor studying by factors between 1.3 and 2.1.
- NESB graduates who studied full time were less likely than NESB graduates who studied part time to be working full time than neither working nor studying.
- NESB graduates who attended metropolitan institutions were less likely than NESB graduates who attended regional institutions to be working full time, working part time or self-employed than neither working nor studying.

- NESB graduates from the lowest three SES quartiles were less likely than NESB graduates from the top SES quartile to be self-employed than neither working nor studying.

Figure 10: Odds ratios for demographic and educational predictors of NESB outcomes (n=34,230)



Graduates born outside Australia

This section of the report focuses on the employment outcomes of graduates born outside Australia (a total population of 55,166). The first analysis undertaken was a binomial logistic regression to ascertain the effects of different factors on the likelihood that graduates born outside Australia were working or not working. This was run three times with the same three sets of factors as highlighted previously: demographic factors, educational factors and educational experience factors. Reported here were those patterns with statistical significance.

Summary of key findings from the cohort born outside Australia

Graduates born outside Australia who undertook paid work during their final year of study were 13 times more likely to be working than graduates born outside Australia who did not do so. Graduates born outside Australia who were aged 23 or over, spoke English at home, did not have a disability, were in the top three SES quartiles, who studied by distance or mixed modes and who were from disciplines other than *natural and physical sciences* were more likely to be working than their counterparts.

The omnibus model for the logistic regression analysis with demographic factors was statistically significant[xvi]. The model explained 4.3% of variance in working and was 76.6 per cent accurate in its prediction of whether graduates born outside Australia were working. Key findings were as follows:

- Graduates born outside Australia aged 23 to 25, 26 to 32 or 33 or over were 1.3, 1.7 and 1.9 times, respectively, more likely than graduates born outside Australia aged 22 or under to be working.
- Graduates born outside Australia who had a disability were 0.6 times less likely than graduates born outside Australia who did not have a disability to be working.
- Graduate born outside Australia who spoke English at home were 1.6 times more likely than graduates born outside Australia who do not speak English at home to be working.
- Graduates born outside Australia who were in the top three SES quartiles were between 1.1 and 1.3 times more likely than graduates born outside Australia in the bottom SES quartile to be working.
- Graduates born outside Australia who lived in Victoria and Tasmania were less likely than graduates born outside Australia who lived in New South Wales to be working.
- Graduates born outside Australia who lived in regional areas were slightly less likely than graduates born outside Australia who lived in metropolitan areas to be working.

The omnibus model for the logistic regression analysis with educational factors was statistically significant.[xvii] The model explained 9.6% of variance in working and was 75.9 per cent accurate in its prediction of whether graduates born outside Australia were working. Key findings were:

- Graduates born outside Australia who gained a graduate certificate, a master's degree by research or a doctorate by research were more likely than graduates born outside Australia who gained a bachelor degree to be working.
- Graduates born outside Australia who gained an associate degree were less likely than graduates born outside Australia who gained a bachelor degree to be working.
- Graduates born outside Australia from all other disciplines were more likely than graduates born outside Australia who gained a degree in *natural and physical sciences* to be working.
- Graduates born outside Australia who studied by distance or mixed modes were 1.9 and 1.4 times, respectively, more likely than graduates born outside Australia who studied on campus to be working.

The omnibus model for the logistic regression analysis with educational experience factors was statistically significant.[xviii] The model explained 38.5% of variance in working and was 83.1 per cent accurate in its prediction of whether graduates born outside Australia were working. The key finding is that graduates born outside Australia who undertook paid work during their final year of study were 13.2 times more likely to be working than graduates born outside Australia who did not do so.

As before, the binomial logistic regression was followed by a multinomial logistic regression, with the dependent variables of all the outcomes specified previously.

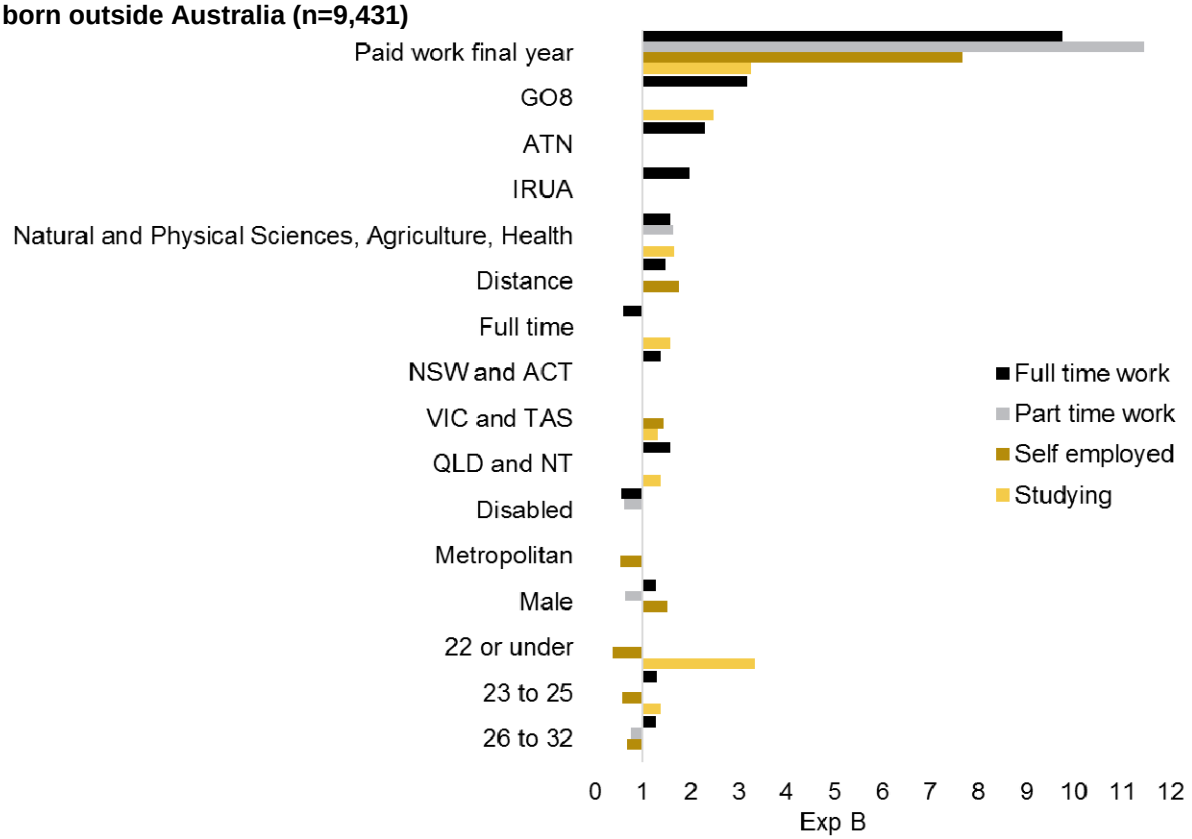
Figure 11 shows the odds ratios for the demographic and educational predictors for the outcomes of graduates born outside Australia. Any odds ratios that were not statistically significant have been omitted. Key findings were as follows:

- Graduates born outside Australia who had undertaken paid work in their final year of study were more likely than graduates born outside Australia who had not undertaken paid work in their final year of study to be in full time work, part time work, self-employed or studying than neither working nor studying by factors of 9.8, 11.5, 7.7 and 3.3 respectively.
- Graduates born outside Australia who attended a GO8, ATN or IRUA institution were more likely than graduates born outside Australia who attended a RUN institution to be in full time work than neither working nor studying, by factors of 3.2, 2.3 and 2.0, respectively.
- Graduates born outside Australia who attended a GO8 institution were more likely than graduates born outside Australia who attended a RUN institution to be studying than neither working nor studying by a factor of 2.5.
- Graduates born outside Australia from the fields of *natural and physical sciences*, *agriculture* or *health* were more likely than graduates born outside Australia from the fields of *social sciences, humanities, arts* and *education* to be in full time work, in part time work or studying than neither working nor studying by a factor of 1.6.
- Graduates born outside Australia who studied via a distance mode were more likely than graduates born outside Australia who studied on campus to be working full time

or self-employed than neither working nor studying by factors of 1.5 and 1.8, respectively.

- Graduates born outside Australia who had studied full time were more likely than graduates born outside Australia who had studied part time to be undertaking further study than neither working nor studying by a factor of 1.6, but were less likely to be in full time work.
- Graduates born outside Australia aged 22 or under or 23 to 25 were more likely than graduates born outside Australia aged 33 or over to be studying than neither working nor studying by factors of 3.4 and 1.4, respectively.
- Graduates born outside Australia aged 23 to 32 were more likely than graduates born outside Australia aged 33 or over to be working full time than neither working nor studying by a factor of 1.3.
- Graduates born outside Australia aged 32 or under were less likely than graduates born outside Australia aged 33 or over to be self-employed than neither working nor studying.
- Male graduates born outside Australia were more likely than female graduates born outside Australia to be working full time or self-employed than neither working nor studying, but were less likely to be working part time.
- Graduates born outside Australia who had a disability were less likely than graduates born outside Australia who did not have a disability to be working full time or working part time than neither working nor studying.
- Graduates born outside Australia living in New South Wales, the Australian Capital Territory, Queensland or the Northern Territory were more likely than graduates born outside Australia living in Western Australia or South Australia to be studying than neither working nor studying.
- Graduates born outside Australia living in Victoria or Tasmania were more likely than graduates born outside Australia living in Western Australia or South Australia to be self-employed than neither working nor studying.
- Graduates born outside Australia living in Queensland or the Northern Territory were more likely than graduates born outside Australia living in Western Australia or South Australia to be working full time than neither working nor studying by a factor of 1.6.
- Graduates born outside Australia living in metropolitan areas were less likely than graduates born outside Australia living in regional areas to be self-employed than neither working nor studying.

Figure 11: Odds ratios for demographic and educational predictors of outcomes of graduates born outside Australia (n=9,431)



Graduates from low SES groups

This section of the report focuses on the employment outcomes of graduates from the bottom SES quartile (a total population of 11,151). The first analysis undertaken was a binomial logistic regression to ascertain the effects of different factors on the likelihood that low SES graduates were working or not working. This was run three times with the three sets of factors highlighted above: demographic factors, educational factors and educational experience factors. Reported here were those patterns with statistical significance.

Summary of key findings from the low SES cohort

Low SES graduates who undertook paid work in the final year of their degree were 16 times more likely to be working than low SES graduates who did not work. Low SES graduates who were female, aged 23 or over, lived in a metropolitan area, who spoke English as a first language, studied via a distance or mixed mode and who gained degrees in a discipline area other than *natural and physical sciences* were more likely to be working than their counterparts. Low SES graduates who were Indigenous, had a disability or who were born outside Australia were less likely to be working.

The omnibus model for the logistic regression analysis with demographic factors was statistically significant.[xix] The model explained 5.8% of variance in working and was 79.1 per cent accurate in its prediction of whether low SES graduates were working. Key findings were as follows:

- Low SES graduates aged 23 to 25, 25 to 32 or 33 or over were 1.3, 1.4 and 1.5 times, respectively, more likely than low SES graduates aged 22 or under to be working.
- Female low SES graduates were 1.2 times more likely than male low SES graduates to be working.
- Low SES graduates with a disability were 0.7 times less likely than low SES graduates without a disability to be working.
- Low SES graduates who were Indigenous were 0.4 times less likely than low SES graduates who were not Indigenous to be working.
- Low SES graduates who spoke English as a first language were 1.4 times more likely than low SES graduates who did not speak English as a first language to be working.
- Low SES graduates born outside Australia were 0.3 times less likely than low SES graduates born in Australia to be working.
- Low SES graduates from South Australia and the Northern Territory were 1.2 and 4.6 times, respectively, more likely than low SES graduates from New South Wales to be working.
- Low SES graduates from Victoria and Tasmania were less likely than low SES graduates from New South Wales to be working.

- Low SES graduates who were living in a regional area were less 0.3 times less likely than low SES graduates who were in metropolitan area to be working.

The omnibus model for the logistic regression analysis with educational factors was statistically significant.[xx] The model explained 15.3 per cent of variance in working and was 79.7 per cent accurate in its prediction of whether low SES graduates were working. Key findings were as follows:

- Low SES graduates who attended an IRUA or RUN institution were less likely than low SES graduates who attended a GO8 institution to be working.
- Low SES graduates who attended a regional institution were 1.6 times more likely than low SES graduates who attended a metropolitan institution to be working.
- Low SES graduates who gained a graduate certificate were more likely than low SES graduates who gained a bachelor's degree to be working.
- Low SES graduates who gained an advanced diploma or diploma or an associate degree were less likely than low SES graduates who gained a bachelor's degree to be working.
- Low SES graduates who gained degrees in all other disciplinary areas were more likely than low SES graduates from *natural and physical sciences* to be working.
- Low SES graduates who studied via a distance mode were 1.4 times more likely than low SES graduates who studied on campus to be working.
- Low SES graduates who deferred HECS or paid international student fees were less likely than low SES graduates who paid HECS fees up front to be working.

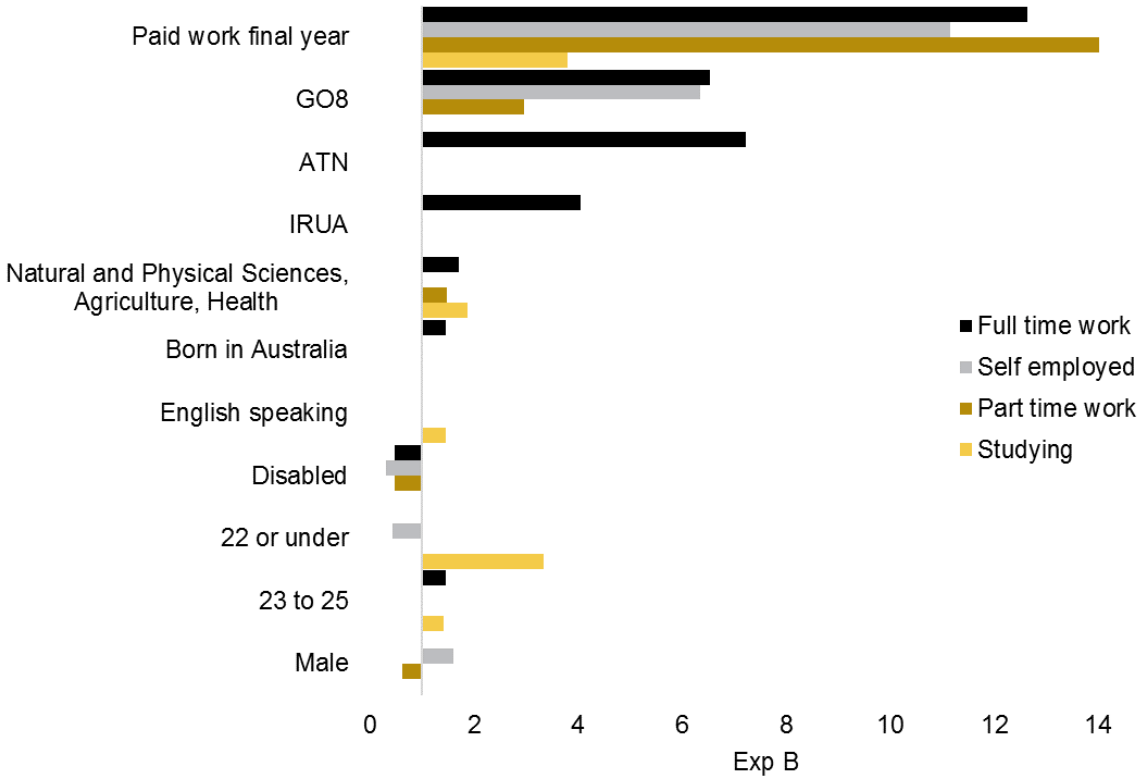
The omnibus model for the logistic regression analysis with educational experience factors was statistically significant.[xxi] The model explained 44.1 per cent of variance in working and was 86.4 per cent accurate in its prediction of whether low SES graduates were working. The key finding is that low SES graduates who undertook paid work in the final year of their degree were 15.9 times more likely to be working than low SES graduates who did not work.

As before, the binomial logistic regression was followed by a multinomial logistic regression, with the dependent variables of all the outcomes specified previously. Figure 12 shows the odds ratios for the demographic and educational predictors for the outcomes of low SES graduates. Any odds ratios that were not statistically significant have been omitted. Key findings were as follows:

- Low SES graduates who undertook paid work in their final year of study were more likely than low SES graduates who did not undertake paid work in their final year to be in full time work, in part time work, self-employed or studying than neither working nor studying by factors of 12.6, 14.4, 11.2 and 3.8 respectively.
- Low SES graduates who attended GO8, ATN or IRUA institutions were more likely than low SES graduates who attended RUN institutions to be in full time work than neither working nor studying by factors of 6.5, 7.2 and 4.0 respectively.

- Low SES graduates who attended GO8 institutions were more likely than low SES graduates who attended RUN institutions to be in part time work or self-employed than neither working nor studying by factors of 2.9 and 6.3
- Low SES graduates from the fields of *natural and physical sciences*, *agriculture* or *health* were more likely than low SES graduates from the fields of *social sciences, humanities, arts* and *education* to be in full time work, in part time work or studying than neither working nor studying by factors of 1.7, 1.5 and 1.9, respectively.
- Low SES graduates who were born in Australia were more likely than low SES graduates who were born outside Australia to be working full time than neither working nor studying by a factor of 1.4.
- Low SES graduates who spoke English at home were more likely than low SES graduates who spoke another language at home to be studying than neither working nor studying by a factor of 1.4.
- Low SES graduates with a disability were less likely than low SES graduates who did not have a disability to be working full time, working part time or to be self-employed than neither working nor studying.
- Low SES graduates who were male were more likely than low SES graduates who were female to be self-employed than neither working nor studying by a factor of 1.6, but were less likely to be in part-time work.
- Low SES graduates who were aged 22 or under or 23 to 25 were more likely than low SES graduates aged 33 or over to be studying than neither working nor studying by factors of 3.3 and 1.4.
- Low SES graduates who were aged 23 to 35 were more likely than low SES graduates aged 33 or over to be working full time than neither working nor studying by a factor of 1.5.
- Low SES graduates who were aged 22 or under were less likely than low SES graduates aged 33 or over to be self-employed than neither working nor studying.

Figure 12: Odds ratios for demographic and educational predictors of outcomes of low SES graduates (n=3,891)



Females in technical areas

This section of the report focuses on the employment outcomes of female graduates from three broad fields of education in which they are traditionally under-represented. In the AGS data set from 2014 female graduates are in the majority in all but four fields of study. In *engineering and related technologies* they comprise just 18 per cent of graduates, in *information technology* they comprise just 20.7 per cent of graduates and in *architecture and building* they comprise 44.5 per cent of graduates. Interestingly, in *natural and physical sciences* they comprise 55.6 per cent of graduates.

In this analysis the definition of females in technical areas that is utilised by the Australian Government is used, comprising the 8,603 female graduates from the fields of *engineering and related technologies*, *information technology* and *natural and physical sciences.* This cohort is hereafter referred to as *female graduates in technical areas*.

The first analysis undertaken was a binomial logistic regression to ascertain the effects of different factors on the likelihood that female graduates in technical areas were working or not working. This was run three times with the three sets of factors highlighted above: demographic factors, educational factors and educational experience factors. Reported here were those patterns with statistical significance.

Summary of key findings from the female graduates in technical areas cohort

Female graduates in technical areas who undertook paid work in the final year of their degree were 11 times more likely to be working than female graduates in technical areas who did not work. Female graduates in technical areas aged 23 to 25 (compared to aged 22 or under), who spoke English as a first language, were from the top SES quartile (compared to the bottom quartile) and studied via distance mode were more likely to be working than their counterparts. Female graduates in technical areas with a disability or who were born outside Australia were less likely to be working.

The omnibus model for the logistic regression analysis with demographic factors was statistically significant.[xxii] The model explained 5.0 per cent of variance in working and was 72.6 per cent accurate in its prediction of whether female graduates in technical areas were working. Key findings were as follows:

- Female graduates in technical areas aged 23 to 25, 26 to 32 or 33 or over were 1.4, 1.7 and 1.6 times, respectively, more likely than female graduates in technical areas aged 22 or under to be working.
- Female graduates in technical areas with a disability were 0.4 times less likely than female graduates in technical areas without a disability to be working.
- Female graduates in technical areas who spoke English at home were 1.7 times more likely than female graduates in technical areas who spoke another language at home to be working.

- Female graduates in technical areas born outside Australia were 0.3 times less likely than female graduates in technical areas born in Australia to be working.
- Female graduates in technical areas from the top SES quartile were 1.3 times more likely than female graduates in technical areas from the bottom SES quartile to be working.
- Female graduates in technical areas from South Australia were 0.3 times less likely than female graduates in technical areas from New South Wales to be working.

The omnibus model for the logistic regression analysis with educational factors was statistically significant.[xxiii] The model explained 8.7 per cent of variance in working and was 71.6 per cent accurate in its prediction of whether female graduates in technical areas were working. Key findings were as follows:

- Female graduates in technical areas who gained an advanced diploma or diploma were 0.7 times less likely than female graduates in technical areas who gained a bachelor degree to be working.
- Female graduates in technical areas who gained a graduate certificate, masters by coursework or doctorate by research were more 2.4, 1.6 and 2.2 times, respectively more likely than female graduates in technical areas who gained a bachelor degree to be working.
- Female graduates in technical areas who attended an ATN institution were 1.3 times more likely than female graduates in technical areas who attended a GO8 institution to be working.
- Female graduates in technical areas from the fields of *information technology* and *engineering and related technologies* were 1.8 and 1.9 times, respectively, more likely to be working than female graduates in technical areas from the field of *natural and physical sciences*.
- Female graduates in technical areas who studied via a distance mode or mixed mode were 1.7 and 1.5 times, respectively, more likely than female graduates in technical areas who studied on campus to be working.
- Female graduates in technical areas who paid fees by deferring HECS were 1.3 times more likely than female graduates in technical areas who paid HECS upfront to be working.

The omnibus model for the logistic regression analysis with educational experience factors was statistically significant.[xxiv] The model explained 32.3 per cent of variance in working and was 79.3 per cent accurate in its prediction of whether female graduates in technical areas were working. The key finding is that female graduates in technical areas who undertook paid work in the final year of their degree were 9.9 times more likely than female graduates in technical areas who did not undertake paid work in the final year of their degree to be working.

As before, the binomial logistic regression was followed by a multinomial logistic regression, with the dependent variables of all the outcomes specified previously. Figure 13 shows the odds ratios for the demographic and educational predictors for the outcomes of female

graduates from technical areas. Any odds ratios that were not statistically significant have been omitted. Key findings were as follows:

- Female graduates in technical areas who undertook paid work in their final year of study were more likely than female graduates in technical areas who did not undertake paid work in their final year of study to be in full time work, in part time work, self-employed or studying than neither working nor studying by factors of 7.76, 10.9, 6.2 and 2.9, respectively.

- Female graduates in technical areas who lived in New South Wales, the Australian Capital Territory, Victoria or Tasmania were more likely than female graduates from technical areas who lived in Western Australia or South Australia to be self-employed than neither working nor studying by factors between 6.2 and 9.9.

- Female graduates in technical areas who spoke English as a first language were more likely than female graduates from technical areas who spoke another language at home to be working full time than neither working nor studying by a factor of 1.6.

- Female graduates in technical areas who were born in Australia were more likely than female graduates from technical areas who were born outside Australia to be working full time, self-employed or studying than neither working nor studying by factors of 1.7, 3.6 and 1.5, respectively.

- Female graduates in technical areas who attended metropolitan institutions were more likely than female graduates from technical areas who attended regional institutions to be studying than neither working nor studying by a factor of 2.7.

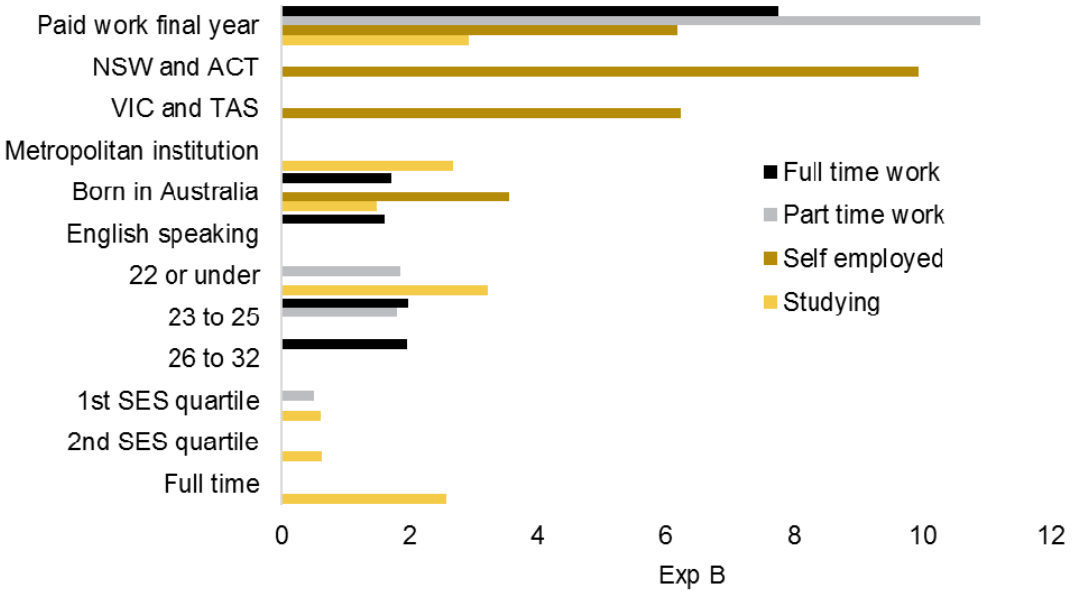
- Female graduates in technical areas aged 22 or under were more likely than female graduates in technical areas aged 33 or over to be working part time or studying than neither working nor studying by factors of 1.8 and 3.2.

- Female graduates in technical areas aged 23 to 32 were more likely than female graduates in technical areas aged 33 or over to be working full time than neither working nor studying by a factor of 1.9.

- Female graduates in technical areas from the 1st and 2nd SES quartiles were less likely than female graduates in technical areas from the top SES quartile to be studying than neither working nor studying.

- Female graduates in technical areas who studied full time were more likely than female graduates in technical areas who studied part time to be studying than neither working nor studying by a factor of 2.6.

Figure 13 Odds ratios for demographic and educational predictors of outcomes female graduates in technical areas (n=2,761)



Paid work in the final year of study

As the preceding sections have shown, undertaking paid work in the final year of study appears to be the single most important factor in predicting whether a graduate is working four to six months after graduation. One explanation is that many graduates were working in the same job that they were doing in the final year of their studies. Given that this is such a powerful finding, it is worthy of more attention.

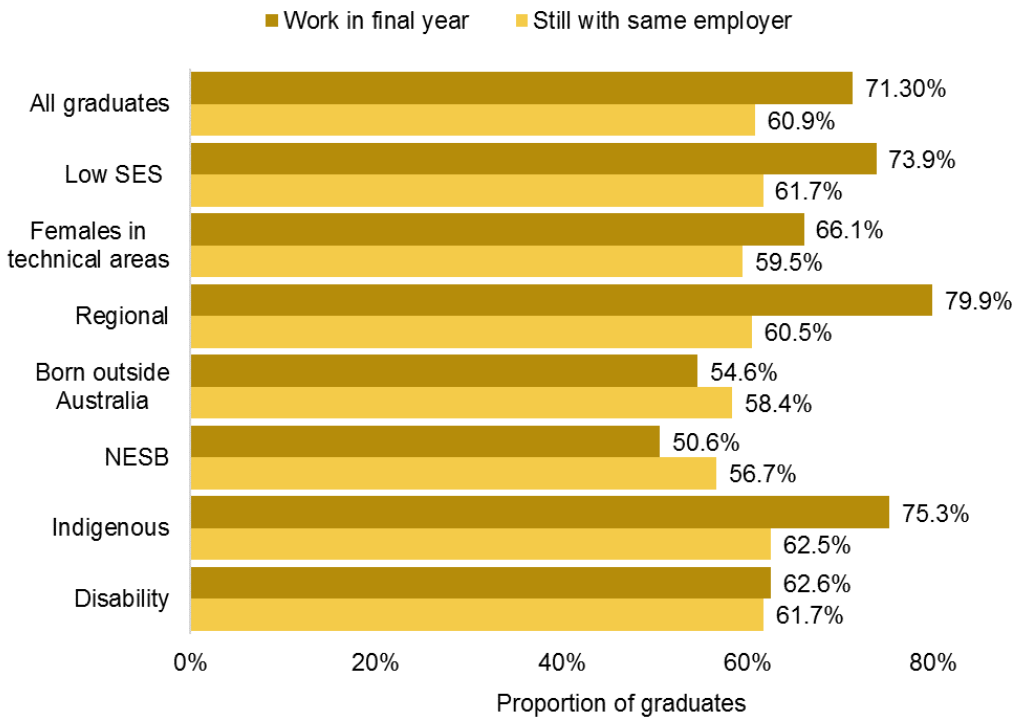
Summary of key findings on the importance of paid work in the final year of study

Undertaking paid work in the final year of study appears to be the single most important factor in predicting whether a graduate is working. Approximately seven out of ten (71%) per cent of graduates reported undertaking paid work in the final year of their study, with 61% of these reporting they were still with the same employer. Of these, less than a quarter were in a role for which their qualification was a formal requirement and almost half were in a role for which their qualification was only somewhat or not important, yet two-thirds were not seeking alternative employment. Graduates from regional areas, who were Indigenous or who had a low SES status were most likely to have undertaken paid work during the final year of their study.

Figure 14 shows the proportion of each of the disadvantaged groups in the analysis who reported undertaking paid work in the final year of their study. This varied between 50.6 per cent for NESB graduates to 79.9 per cent of graduates living in regional areas of Australia, against 71.3 per cent of all graduates. This shows the prevalence of paid work among university students in Australia.

The proportion of graduates who reported undertaking paid work during their final year of study AND who reported still working with the same employer is also shown. This ranges from 56.7 per cent of NESB graduates to 62.5 per cent of Indigenous graduates, against 60.9 per cent of all graduates.

Figure 14: Paid work in the final year of study, all graduates (n=102,644)



This finding suggests that much of the AGS data so widely reported on graduate employment outcomes reflects ongoing employment while studying and after graduation rather than employment which is gained as a consequence of completing a university degree. The data also suggests that graduates from regional areas, who were Indigenous or were from the bottom SES quartile were more likely to undertake paid work during the final year of their studies than the overall university population.

What is not clear, however, is the extent to which the ongoing employment patterns so clearly seen here were in an area related to the discipline studied. That is, it is unclear whether an engineering graduate, for example, undertakes paid work with an engineering firm while studying and then remains with that employer after studying, or whether the ongoing employment is in an entirely unrelated area (such as in a fast-food franchise).

If the latter, this might suggest that the widespread faith placed in employment statistics is based on mistaken assumptions. Indeed, a graduate's report of ongoing employment might be regarded as a negative outcome of graduation, rather than a positive one.

To extend this thinking, the team selected all respondents who reported both working during the final year of their studies and still working for the same employer as graduates (a total of 61,884 graduates). Of this group, one-quarter reported that they were undertaking further study as well as working and to ensure that the study status did not interfere with the results these graduates were excluded from the sample, leaving a total of 45,264.

Of these, just over one-third (37.1 per cent) were seeking employment and the others were not. This suggests that 28,143 graduates were still working with the same employer that they worked for during the final year of their study and were not looking to move elsewhere. What is not known is the nature of the work they were doing, whether it was related to their degree and, indeed, if they required their degree to perform the role they were in.

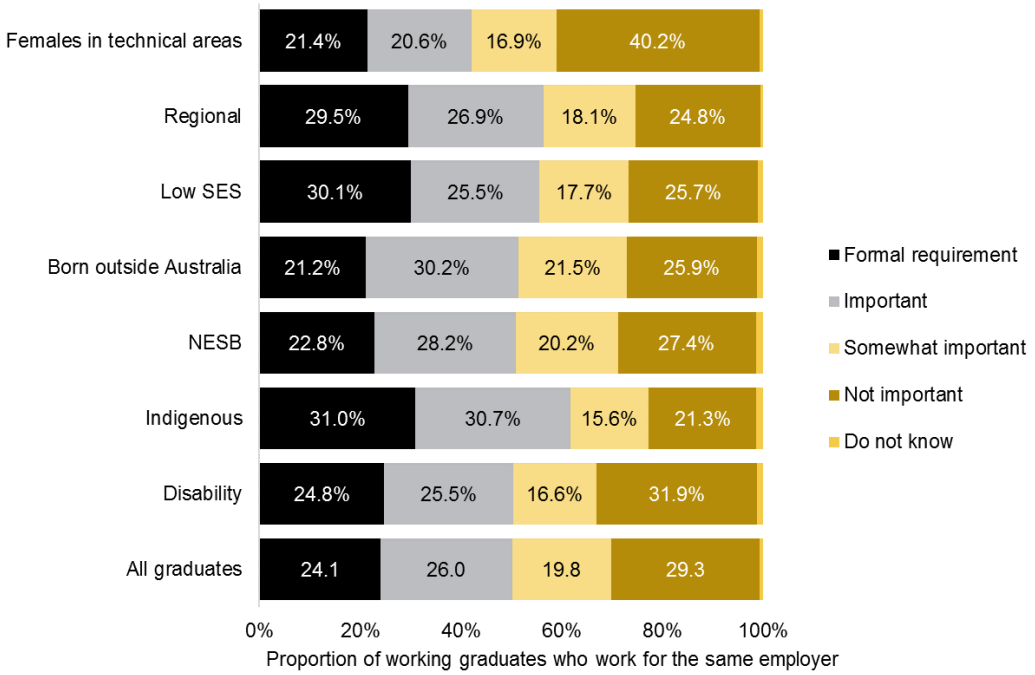
It was, therefore, desirable to ascertain for those graduates who worked during their final year, were still with the same employer and were not currently studying, whether their employment is related to their field of study. While the AGS collects information on the economic sector in which a graduate works, these data were again misleading: for example, health graduates could report employment in the health sector but we cannot take this to mean that they were health workers.

Similarly, there were no existing mechanisms to record graduates who undertake embedded work: work in which their discipline expertise is applied in another economic sector (for example, a music graduate working as a music therapist in a healthcare setting).

An alternative analysis using the existing graduate data is to consider the reported importance of graduates' qualification to their job. Figure 15 shows the proportion of graduates who were still working for the same employer they had during the final year of their studies, with the added dimension of the importance of their qualification for the job.

For all graduates, as well as for the disadvantaged groups, the proportions were low. Just 24.1 per cent of graduates reported that their qualification was a formal requirement for the role they were in, with a further 26 per cent reporting that their qualification was important. These two proportions were highest for Indigenous graduates and lowest for female graduates in technical areas.

Figure 15: Importance of qualification for job, those who work for the same employer as during their studies (n=45,264)



This suggests that the majority of graduates who work for the same employer as during the final year of their studies are in a role for which the qualification they have just gained is essential, and for just under half of graduates their qualification is only somewhat important or not important for the role they are in.

Does this suggest that few graduates who remain with the same employer as during their studies are employed in roles that would be regarded as graduate positions?

This analysis incorporates graduates from all levels of study and it is of course possible that many postgraduates were already employed in professional work. But further analysis showed that only 27.5 per cent of graduates from bachelor degrees (22.5 per cent from honours degrees) who were working for the same employer they had during their studies were required to have a degree to do the work they were now doing.

It is of course possible that graduates are in what are considered to be graduate positions but which do not have a formal requirement for their qualification. It is not possible to determine this from the data.

Overall, these findings suggest that many of the 'successful' graduate outcomes extrapolated from the AGS data concern graduates who were working in positions where a degree qualification per se is not required. This points to a further need for the AGS to be refined.

Specifically: does graduation from a work-relevant program make graduates more likely to get a promotion with the same employer, and to what extent is graduate work related to the skills and knowledge developed within the graduate's degree program?

With the data collected from this information it would be possible to determine whether the importance of paid work in the final year of studies in predicting employment after graduation simply means that graduates were continuing in the same role they were doing while they were studying or whether it has actually led to a marked improvement in their position.

Considering that more than half of all graduates reported being employed during the final year of their studies and that more than 55 per cent remained with the same employer after graduation, this appears to be a critical area in need of further research.

Moreover, the proportion of graduates staying with their pre-graduation employer is higher for most disadvantaged groups than for the graduate population as a whole, making this also an issue for equity-related research.

We note in particular that three-quarters of Indigenous graduates reported working during their final year of study and almost two-thirds of these graduates reported working for the same employer after graduation.

Salary outcomes

Beyond knowing whether graduates were working or studying, the AGS data can also give an indication of the status of the graduate role. Whilst it is a crude measure, earning potential is often regarded as a proxy for success. Hence any analysis of graduate outcomes for individuals from disadvantaged backgrounds needs to consider salary differentials.

Summary of key findings on graduate salary outcomes

Positive influences on graduate salaries were being male, from the top SES quartiles, studying at a Go8 institution and studying via distance mode. Negative influences on graduate salaries were being Indigenous, having a disability, being born outside Australia, being from a non-English speaking background, studying at a regional institution, and undertaking paid work the final year of study.

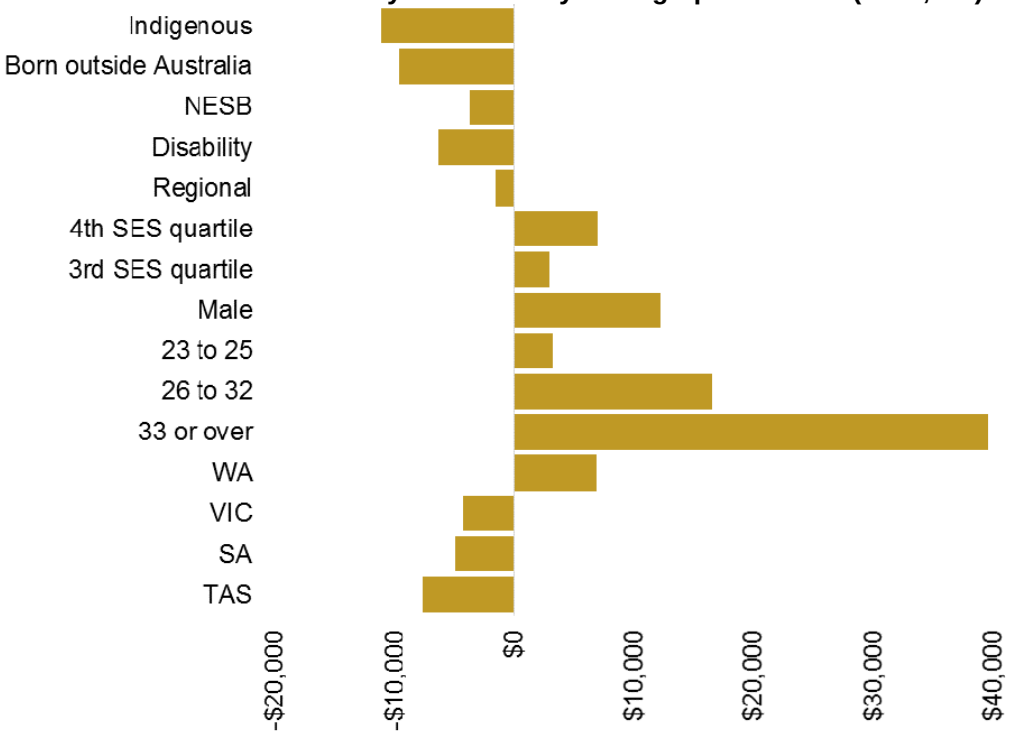
Full time salary

In the analysis of salary outcomes, the team considered the salary of full-time employees and part-time employees separately. Of the 57,892 graduates working full time, those reporting that they were working overseas were excluded due to the difficulty of comparing salaries across countries. Of the remaining 52,504, any who reported earning less than the Australian minimum wage were excluded because this data was deemed unreliable, leaving a final analysis population of 43,194.

A regression analysis was carried out with the three sets of variables – demographic factors, educational factors and educational experience factors. The constant annual salary was $57,784. Only those variations that were statistically significant are included. For demographic variables a number of findings are illustrated at Figure 16. Key findings include:

- Indigenous graduates earned $11,079 less than non-Indigenous graduates.
- Graduates born outside Australia earned $9,573 less than those born in Australia.
- NESB graduates earned $3,663 less than those who spoke English at home.
- Graduates with a disability earned $6,279 less than graduates without a disability.
- Graduates in regional areas earned $1,453 less than graduates in metropolitan areas.
- Graduates from the top two SES quartiles earned $6,999 and $3,059, respectively, more than graduates from the bottom SES quartile.
- Male graduates earned $12,306 more than female graduates.
- Older graduates earned more than those aged 22 or under –graduates aged 23 to 25 $3,311 more, graduates aged 26 to 32 $16,575 more and graduates aged 33 or over $39,662 more.
- Graduates in Victoria, South Australia and Tasmania earned between $4,246 and $7,603 less than those in New South Wales whereas graduates in Western Australia earned $6,923 more than those in New South Wales.

Figure 16: Gross full time annual salary variations by demographic factors (n=43,194)

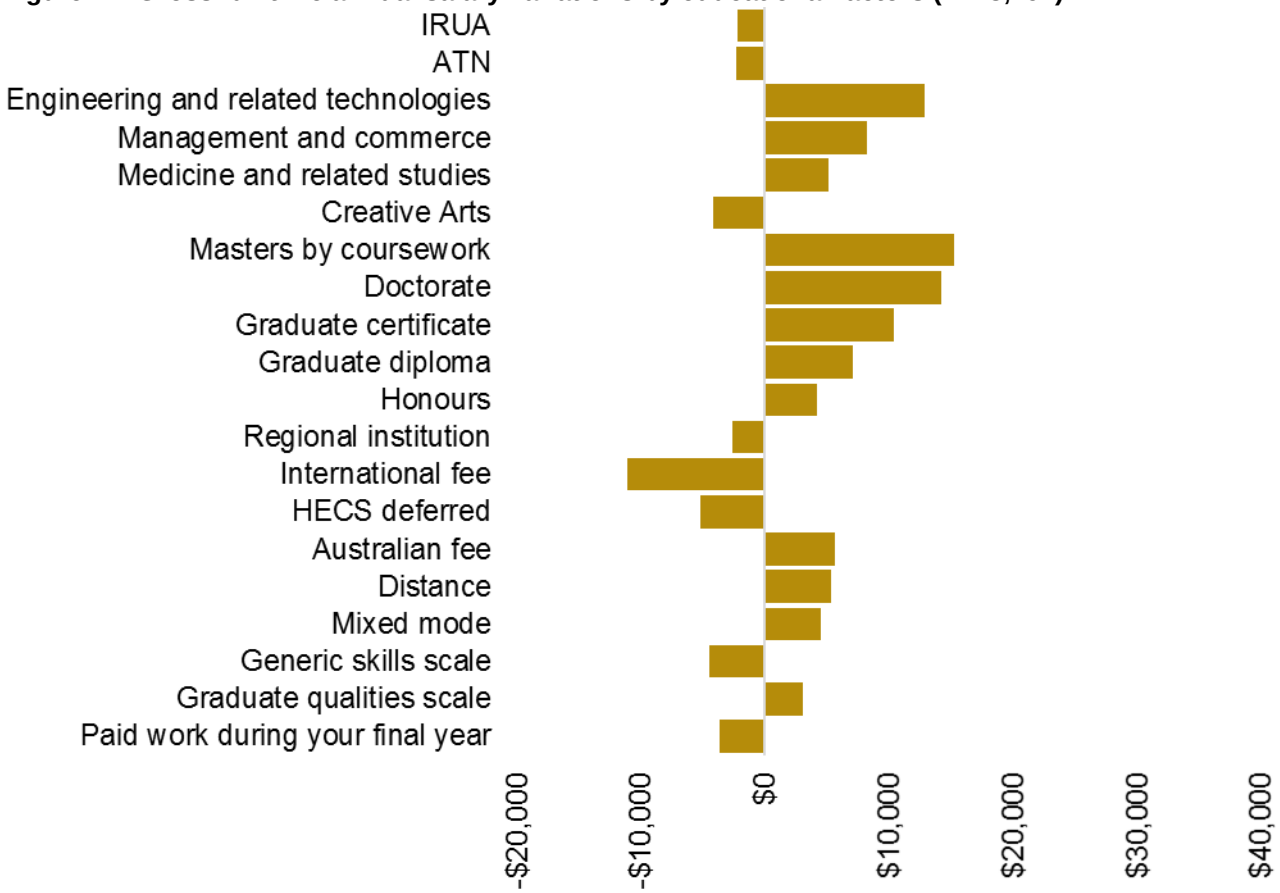


Salary variations around educational factors and educational experience factors are illustrated at Figure 17. Key findings included:

- Graduates from ATN and IRUA institutions earned $2,276 and $2,176 less, respectively, than graduates from GO8 institutions.
- Graduates from the fields of *engineering and related technologies*, *management and commerce* or *medicine and related studies* earned more than graduates from the field of *natural and physical sciences* by $12,884, $8,254 and $5,159 more respectively, while graduates from the field of *creative arts* earned $4,154 less than graduates from the field of *natural and physical sciences*.
- Graduates from masters by coursework, doctorate, graduate certificate, graduate diploma or bachelor's degrees with honours earned more than those from bachelor degrees - $15,327, $14,297, $10,427, $7,098 and $,4,199 more, respectively.
- Graduates from regional institutions earned $2,590 less than graduates from metropolitan institutions.
- Graduates who had paid Australian fees earned $5,634 more than those who had paid HECS up front while graduates who had deferred HECS or paid international student fees earned less than those who had paid HECS up front by $5,152 and $11,092 respectively.
- Graduates who studied via a distance or mixed mode earned $5,320 and $4,505 more, respectively, than those who studied on campus.
- Graduates who undertook paid work in their final year of study earned $3,655 less than those who did not do so.

- Graduates who scored highly on the generic skills scale earned $4,477 less than those who scored at a lower level.
- Graduates who scored highly on the graduate qualities scale earned $3,147 more than those who scored at a lower level.

Figure 17: Gross full time annual salary variations by educational factors (n=43,194)



Overall, these findings suggest that factors such as age, gender, field of education and level of study are correlated with the greatest variations in salary. Nevertheless, graduates from five disadvantaged backgrounds – Indigenous, with a disability, low SES, NESB and born outside Australia – are predicted to earn less than their peers.

Part time salary

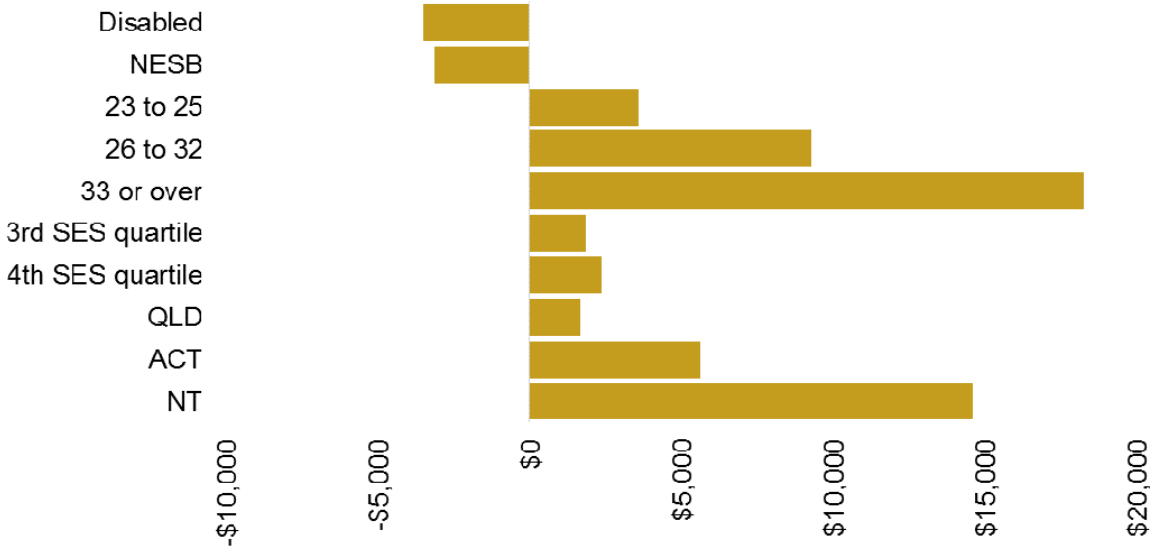
Of the 30,285 graduates working part time, those reporting that they were working overseas were excluded due to the difficulty of comparing salaries across countries, leaving an analysis population of 28,147.

A regression analysis was carried out with the three sets of variables – demographic factors, educational factors and educational experience factors. Only those variations that were statistically significant were included. For demographic variables alone the constant was $20,722 and a number of findings are illustrated at Figure 18. Key findings included:

- Graduates with a disability earned $3,528 less than non-Graduates with a disability.
- NESB graduates earned $3,133 less than those who spoke English at home.

- Older graduates earned more than those aged 22 or under –graduates aged 23 to 25 by $3,585, graduates aged 26 to 32 by $9,245 and graduates aged 33 or over by $18,252.
- Graduates from the top and second-top SES quartiles earned $2,354 and $1,834 more, respectively, than those in the bottom SES quartile.
- Graduates in the Northern Territory, the Australian Capital Territory and Queensland earned $14,589, $5,629 and $1,627 more, respectively, than those in New South Wales.

Figure 18: Gross part time annual salary variations by demographic factors (n=28,147)

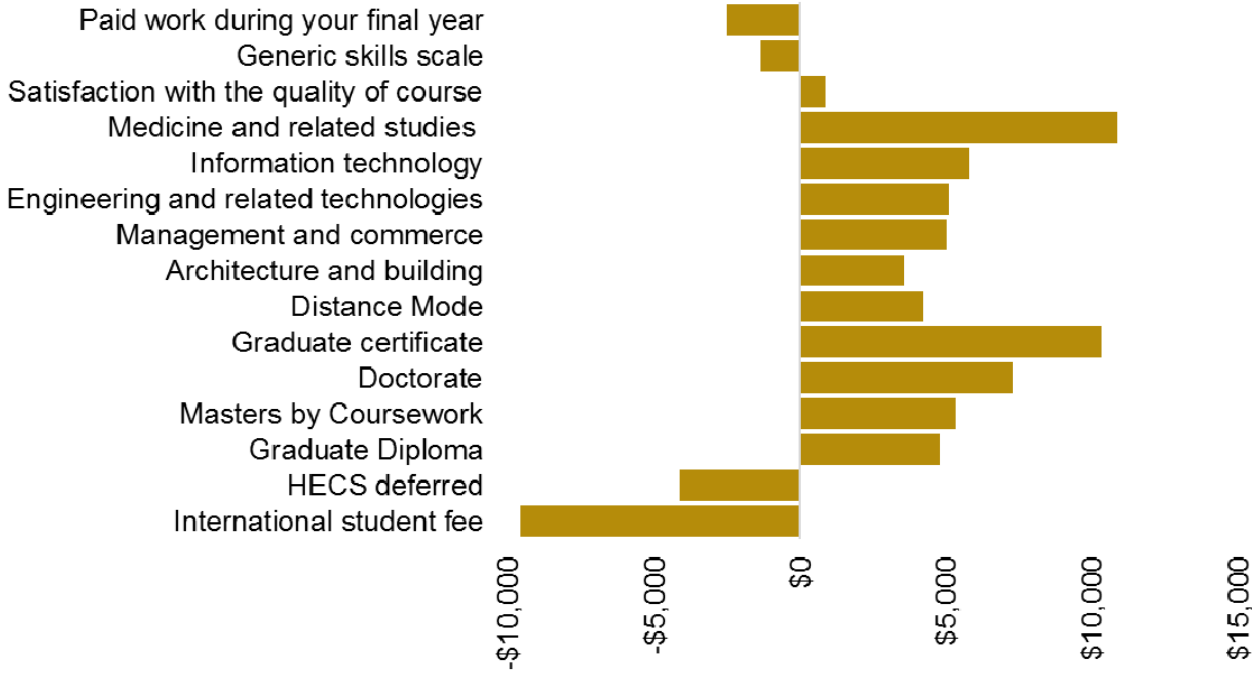


Salary variations around educational factors and educational experience factors are illustrated at Figure 19. Key findings included:

- Graduates who undertook paid work in their final year of study earned $2,499 less than those who did not do so.
- Graduates who scored highly on the generic skills scale earned $1,324 less than those who scored at a lower level.
- Graduates who scored highly on the graduate qualities scale earned $877 more than those who scored at a lower level.
- Graduates from the fields of *medicine and related studies, information technology, engineering and related studies*, *management and commerce* and *architecture and building* earned more than graduates from the field of *natural and physical sciences* by $10,867, $5,778, $5,122, $5,018 and $3,574 more, respectively.
- Graduates who studied via a distance mode earned $4,188 more than those who studied on campus.
- Graduates from graduate certificate, doctorate, master's by coursework and graduate diploma levels earned more than those from bachelor degrees by $10,320, $7,290, $5,365 and $4,807 respectively.

- Graduates who had deferred HECS or paid international student fees earned $4,096 and $9,589 less than those who paid HECS fees upfront.

Figure 19: Gross part time annual salary variations by educational factors (n=28,147)



Similarly to the patterns seen for full-time salaries, these findings seem to suggest that factors such as age, field of study and level of study are correlated with the greatest variations in salary. Nevertheless, graduates from three disadvantaged backgrounds – with a disability, low SES and NESB – earned less than their peers.

Employment characteristics

In addition to salary, it is possible that the employment of graduates from disadvantaged backgrounds was distinguished by their type of employment and the characteristics of their employer. All employed graduates were selected for this section, a total of 106,467.

Summary of key findings on graduate employment characteristics

There were notable differences in characteristics of employers of graduates across disadvantaged groups, compared to all other graduates. Indigenous graduates were overrepresented in government, not-for-profit organisations and public schools, and in the health and community services sector; but under-represented in property and business.

Graduates with a disability were over-represented in not-for-profit organisations; low-SES graduates were over-represented in public schools; and regional graduates were over-represented in health and community services. NESB graduates were over-represented in the finance and insurance sector, retail trade, accommodation, cafes and restaurants, and manufacturing.

Employed NESB graduates and employed graduates born outside Australia worked in finance and insurance in greater proportions than all employed graduates. Further, greater proportions of employed NESB graduates, graduates born outside Australia and graduates with a disability were on temporary or casual contracts, and greater proportions of low SES and regional graduates were on fixed term contracts of up to 12 months.

There were also notable differences in the ways disadvantaged groups sought employment. Employed Indigenous graduates made less use of internet advertisements and family or friends; employed NESB graduates were more reliant on friends and family; and employed regional graduates were most likely to approach an employer directly in order to gain employment.

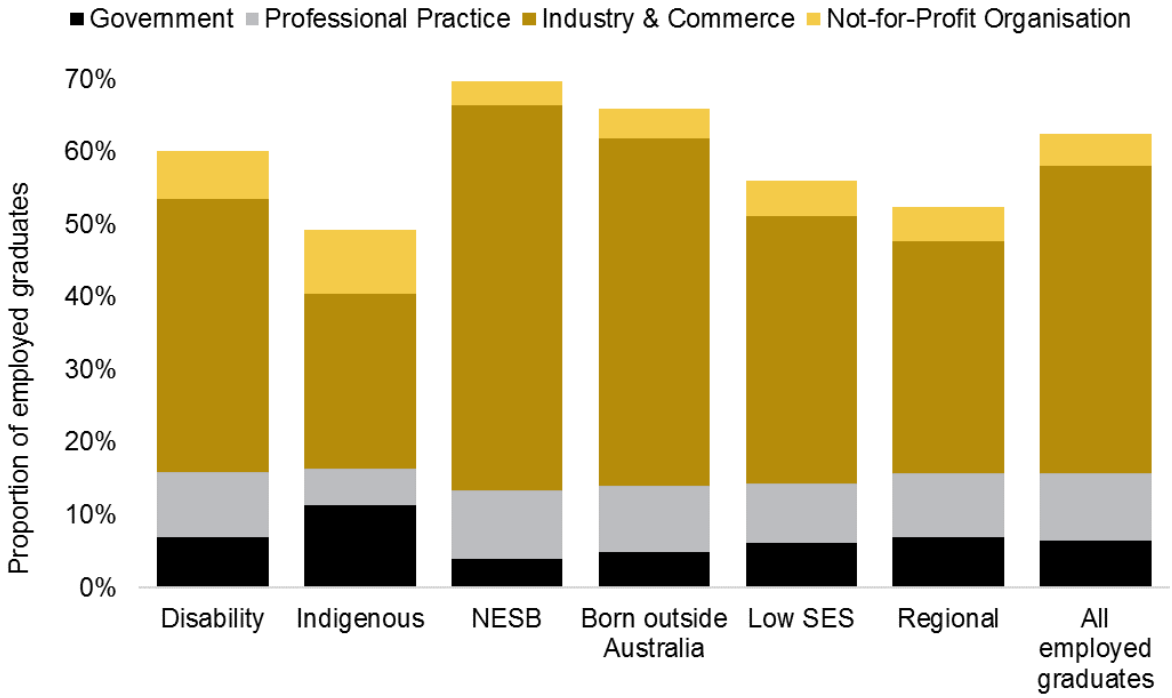
Type of employer

A cross tabulation was run to indicate the type of employers of graduates from different backgrounds. The proportion of employed graduates from different backgrounds that were working for four key employer types – government, professional practice, industry and commerce and not-for-profit organisations - are illustrated at Figure 20. Key findings are:

- 11.3 per cent of employed Indigenous graduates worked for the government, a considerably greater proportion than of all other groups and compared to just 6.5 per cent of all employed graduates.
- Industry and commerce employed the largest proportion of all employed graduates but this varied significantly from 53 per cent of employed NESB graduates to just 24.1 per cent of employed Indigenous graduates and compared to 42.3 per cent of all employed graduates.

- Employed Indigenous graduates and employed graduates with a disability worked for not-for-profit organisations in the greatest proportions, at 8.7 per cent and 6.6 per cent respectively, compared to just 4.4 per cent of all employed graduates.
- Professional practice accounted for 9.3 per cent of all employed graduates but just 4.1 per cent of employed Indigenous graduates.

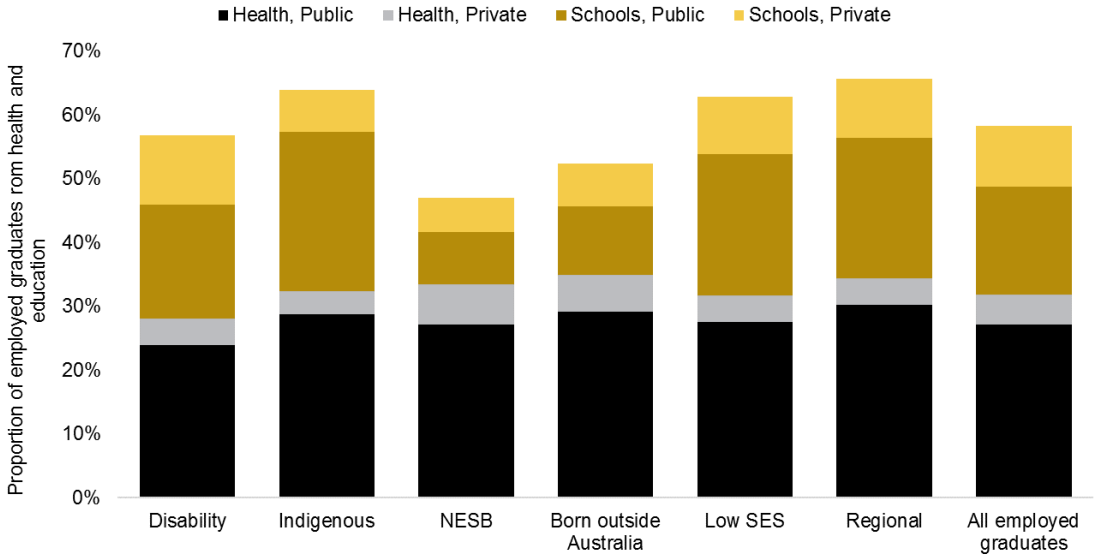
Figure 20: Selected types of employers of employed graduates (n=106,467)



Those graduates who studied either *medicine and related studies* or *education* and who were employed amounted to 31,147. Their distribution across public and private health and education sectors are illustrated in Figure 21. Key findings are:

- The majority of employed graduates from health and education degrees worked in the public health sector, accounting for 27.1 per cent of all employed graduates and between 23.9 and 30.2 per cent of those from disadvantaged groups.
- 4.8 per cent of employed graduates from health and education degrees worked in the private health sector, rising to 6.3 per cent of employed NESB graduates.
- 16.9 per cent of employed graduates from health and education degrees worked in public schools and 9.5 per cent worked in private schools, a ratio of 1.8:1. The ratio was consistent for some employed graduates from disadvantaged backgrounds but among employed Indigenous graduates it was 3.9:1 and for employed low SES and regional graduates it was 2.4:1.

Figure 21: Selected types of employer of employed graduates from health and education (n=34,903)

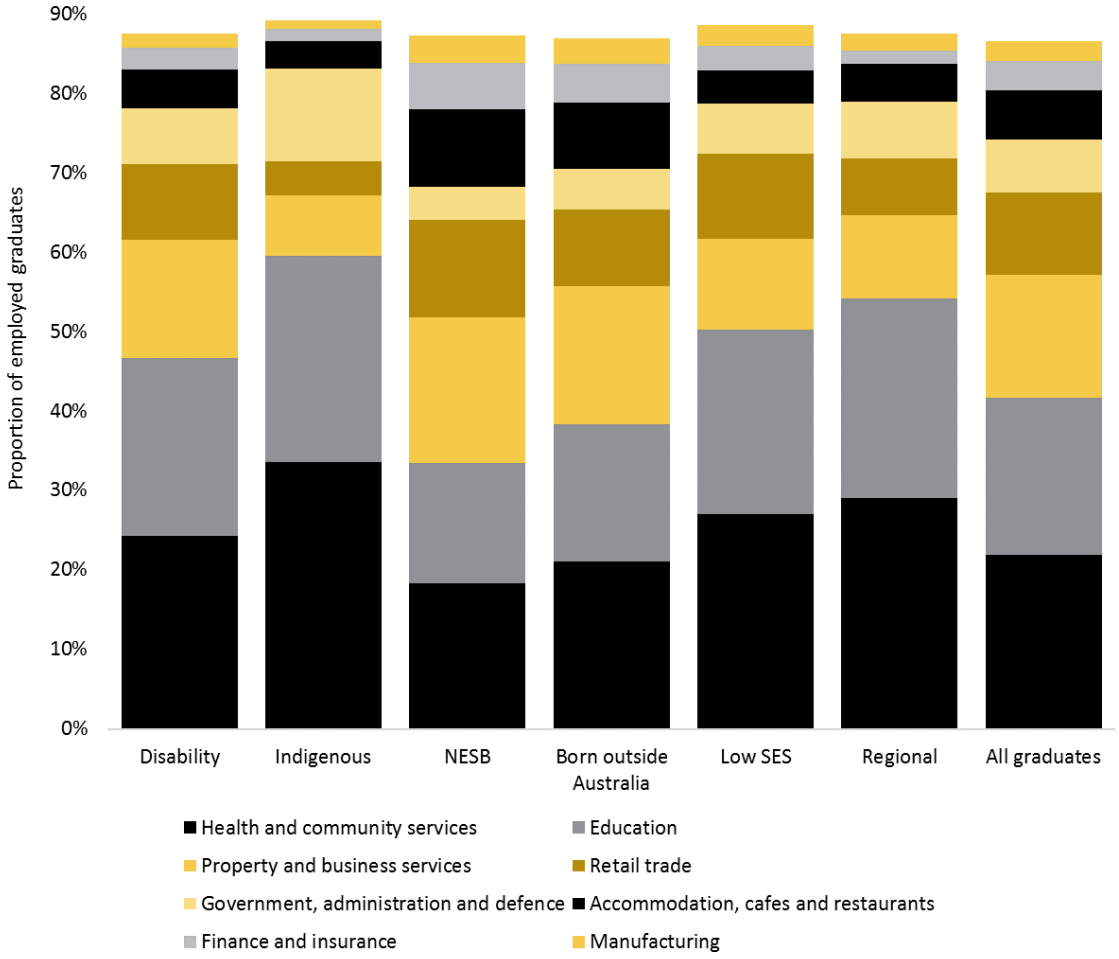


Sector of employment

Another key employment outcome is the sector of employment in which employed graduates worked. The sectors of employment in which at least 3 per cent of employed graduates were working are illustrated in Figure 22. Key findings include:

- 33.6 per cent of employed Indigenous graduates, 29 per cent of employed regional graduates and 26.9 per cent of employed low SES graduates worked in health and community services compared to just 21.8 per cent of all employed graduates.
- 25.9 per cent of employed Indigenous graduates and 25.2 per cent of employed regional graduates worked in education compared to just 19.9 per cent of all employed graduates.
- Just 7.7 per cent of employed Indigenous graduates worked in property and business services compared to 15.5 per cent of all employed graduates.
- 12.3 per cent of employed NESB graduates worked in the retail trade, 9.7 per cent of employed NESB graduates worked in accommodation, cafes and restaurants and 3.4 per cent of employed NESB graduates worked in manufacturing compared to 10.3 per cent, 6.2 per cent and 2.5 per cent, respectively, of all employed graduates
- 11.6 per cent of employed Indigenous graduates worked in government, administration and defence compared to 6.7 per cent of all employed graduates.
- 5.8 per cent of employed NESB graduates and 4.9 per cent of employed graduates born outside Australia worked in finance and insurance, compared to 3.6 per cent of all employed graduates.

Figure 22: Selected sectors of employment of employed graduates (n=106,467)



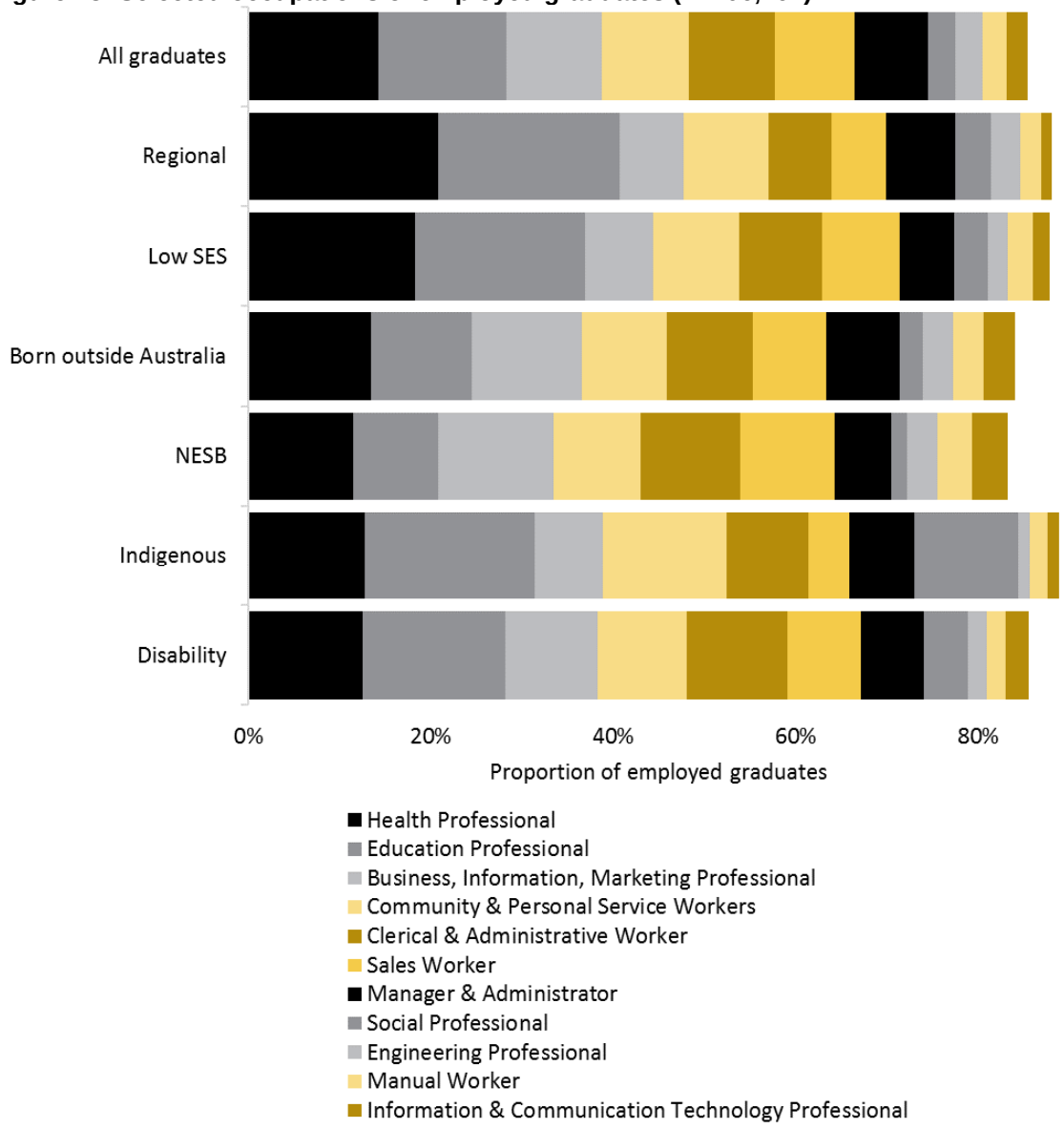
Occupation

A further key employment outcome is the occupation in which graduates worked. The occupations in which at least 3 per cent of employed graduates were working are illustrated in Figure 23. Key findings include:

- 40.6 of employed regional graduates and 36.9 per cent of employed low SES graduates worked as education or health professionals, in comparison to 28.3 per cent of all employed graduates.
- Less than 8 per cent of employed Indigenous, low SES and regional graduates worked as business, information and marketing professionals in comparison to 10.4 per cent of all employed graduates and more than 12 per cent of employed NESB graduates and employed graduates born outside Australia.
- Just 1.3 per cent of employed Indigenous graduates worked as engineering professionals, in comparison to 3 per cent of all employed graduates.
- 10.4 per cent of employed NESB graduates worked as sales workers and 3.8 per cent worked as manual workers, compared to 8.7 per cent and 2.6 per cent, respectively, of all employed graduates.

- 3.9 per cent of employed NESB graduates and 3.4 per cent of employed graduates born outside Australia worked as information and communication technology professionals in comparison to 2.3 per cent of all employed graduates.

Figure 23: Selected occupations of employed graduates (n=106,467)



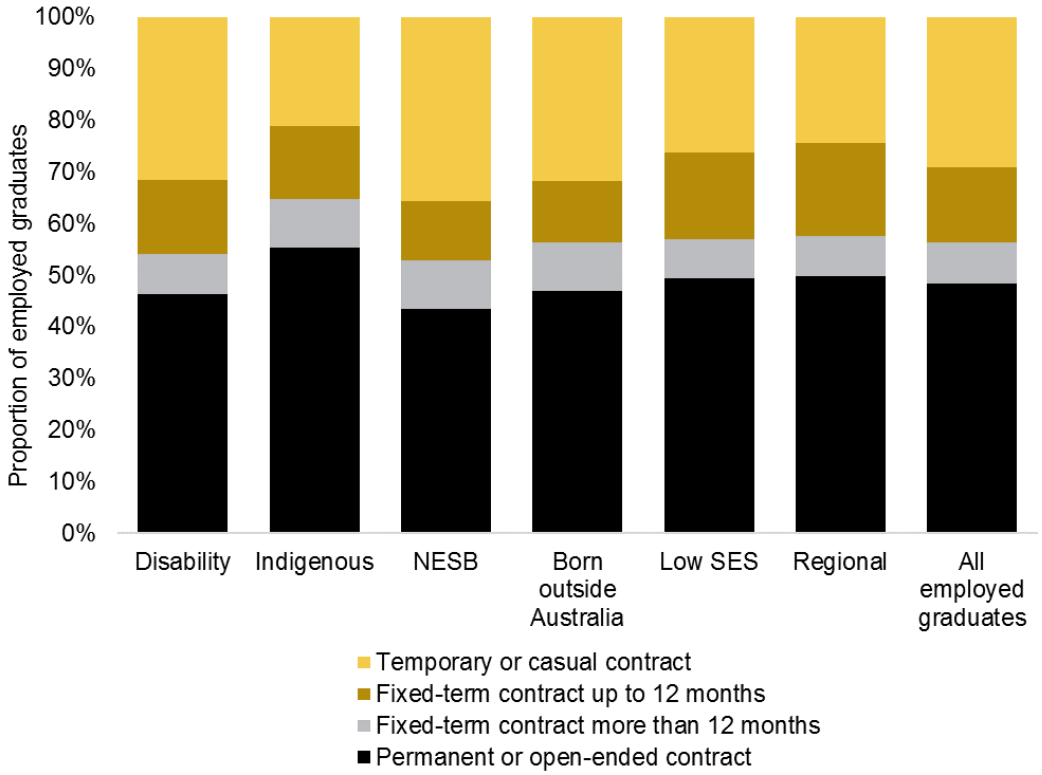
Employment contract

An important employment outcome is the type of contract which graduates held. The proportion of employed graduates in the four main categories of employment are shown in Figure 24. Key findings include:

- 35.7 per cent of employed NESB graduates were employed on temporary or casual contracts, as were 31.7 per cent of employed graduates born outside Australia and 31.6 per cent of employed graduates with a disability, compared to 29.1 per cent of all employed graduates.

- The greatest proportion of graduates employed on permanent or open-ended contracts were employed Indigenous graduates at 55.3 per cent compared to 48.4 per cent of all employed graduates.
- Fixed term contracts of up to 12 months were most common among employed low SES and regional graduates.
- Fixed terms contracts of more than 12 months were most common among employed Indigenous and NESB graduates and among employed graduates born outside Australia.

Figure 24: Employment contracts for employed graduates (n=106,467)



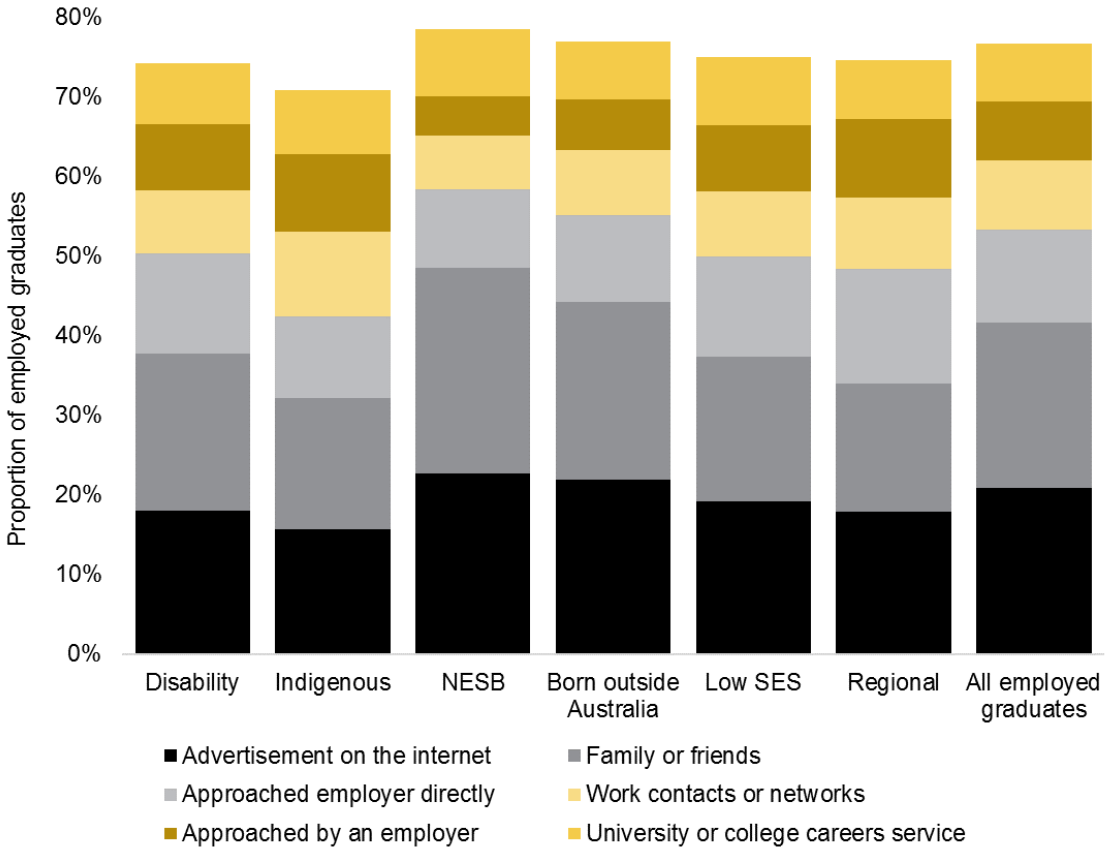
Means of finding employment

The final employment characteristic investigated by the team concerned the strategies adopted by graduates to find employment. Figure 25 indicates the six most common ways that employed graduates reported finding employment. Key results include:

- Employed Indigenous graduates made less use of internet advertisements and family or friends to find employment, with these methods used by 15.7 per cent and 16.4 per cent, respectively, of employed Indigenous graduates in comparison to 20.9 per cent and 20.7 per cent, respectively, of all employed graduates.
- Employed NESB graduates were more reliant on friends and family to find employment than all other cohorts of employed graduates, with this method used by 25.8 of employed NESB graduates in comparison to 20.7 per cent of all employed graduates.

- Employed regional graduates were most likely to approach an employer directly, with this method used by 14.4 per cent of employed regional graduates in comparison to 11.7 per cent of all employed graduates.
- Employed Indigenous graduates made most use of work contacts or networks to find work, with this used by 10.7 of employed Indigenous graduates compared to 8.7 per cent of all employed graduates.

Figure 25: Means of finding employment, employed graduates (n=106,467)



Qualitative data

To further flesh-out the quantitative findings, the study made use of comparative data from a national Australian Office for Learning and Teaching (OLT)-funded project on employability, conducted in 2014-15 (Bennett, Richardson & Mackinnon, forthcoming). The project's aims were to increase understanding of critical issues in enhancing graduate employability in higher education and to identify support for educators seeking to develop student employability.

The purpose here is to draw out the broad themes emerging from these student cohorts, to highlight any potential differences, and to bring out student voices where potential equity and diversity issues were seen. The study did not have an explicit focus on equity and diversity. Equity groups were, however, represented in the responses to the project's online survey, administered to higher education students between July 2014 and January 2015.

Overall there were 379 undergraduate student participants from Australia and 35 from other countries. Among the respondents studying in Australia were students for whom English was

a second language (NESB) and students who identified as Indigenous Australians. There were also students who were classified as low SES given that neither of their parents had completed high school[2]. Table 4 illustrates valid survey respondents from these three groups. Participant ages ranged from 17 to 64; 65.6 per cent were female.

Table 4: Valid survey responses in the student equity sample

	NESB	Indigenous	Low SES
Count	39	9	35
% of respondents studying in Australia	12.9	2.4	9.2
Median age	21	22	22
Gender (% female)	67.3	77.8	60.0
Full time study (%)	93.6	88.9	77.1
Broad field of study			
Creative arts	11	2	10
Health	19	3	8
Information technology	9	1	10
Natural and physical sciences	2	0	0
Society and culture	4	2	2
Management and commerce	3	1	2
Agriculture/environmental science	1	0	0
Education	0	0	1
Architecture and Building	0	0	2

Survey process and demographics

Once ethical approval had been secured, participants were recruited via discipline organisations, higher education networks, peak bodies and university mailing lists. Recruitment took the form of email invitations and short written calls for participation. Additional participants resulted from engagement activities. The size of the equity student cohorts included here is very small and cannot be assumed to indicate broader trends; rather, it is presented in support of the quantitative findings.

The survey, included at Appendix B, required approximately 15 minutes to complete; there was no duplication in respondents. The survey instrument began with questions about education, work and demographics, progressed to questions about career expectations and aspirations, and then asked participants to respond to questions about their current degree program. The instrument included a validated measure of professional identity developed by Adams, Hean, Sturgis and Clark (2006) for use with higher education students, and items from the AUSSE, the GDS, and CI Bennett's (2012, 2014) previous workforce research.

The project employed a naturalistic coding process (Vogt et al., 2014) that started with readings of each response without codes being applied. Categories were developed using a constant comparative analytical scheme (Glaser, 1965). The resulting categories were brought together into provisional categories related to common content.

[2] Note that this is a different way of estimating SES to that used in the AGS

Findings and discussion

Students for whom English is a second language

The forty-nine students for whom English is a second language (NESB) reported first languages predominantly from North East Asia (56.4%) followed by Europe (28.2%), South Asia (20.5%) and the South East Asia/Asia Pacific region (10.3%). The remaining languages related to Africa, Iran and Russia. 38.8% of NESB students were Australian citizens. 28.2% of the students had worked full time and a further 43.6% students reported part-time work. While not directly comparable, 55.3% of more than 19,000 student respondents to the AUSSE in 2012 reported that they typically spent between 1 and 30 hours undertaking paid work in a seven-day week and 10.9% reported that they typically undertook more than 30 hours of paid work. Thus the NESB students here were a little less likely to have done part time work and more likely to have done full time work.

Australian Indigenous students

There were only nine Australian Indigenous students in the study. The students were located in Melbourne, regional Queensland, Perth and Sydney; seven students were female, one male and one transgender. Six of the students had previous work experience, four of them reporting full time work ranging from disability support to retail work and a previous traineeship in accountancy. The trainee was now undertaking an accountancy degree, and a student who reporting working as a disability support workers was undertaking a degree in occupational therapy. For five students, degree studies were unrelated to previous work; two students had not previously worked.

Students from a low SES background

The low SES student cohort included 35 respondents. Twelve of the students reported previous full time work and an equal number reported previous work on a part-time basis, with eleven reporting that they had not worked. Respondents' previous work included retail, hospitality and office work while others had done technical or manual work. Eight had completed TAFE qualifications prior to commencing their university studies and four had a previous university qualification.

Characteristics of a professional

Students were asked to report the characteristics of professionals in their field and what employers were looking for in graduates. Both questions called for open responses and the data was analysed to create common themes. The results are shown at Table 5 which illustrates the proportion of comments from graduates in each cohort that referred to each of the key themes.

As is clear from the data, students from all cohorts placed great emphasis on skills and knowledge, professionalism, motivation and interpersonal skills. In addition, work experience was a common inclusion, and it was surprising that only two students mentioned volunteer experience.

Table 5: Characteristics of professionals/what employers look for (%)

Characteristics	Occurrence in each cohort (%)			
	NESB	Indigenous	Low SES	Non-equity
Discipline-specific skills & knowledge	30.1	22.2	37.1	15.0
Professionalism (work ethics)	23.1	44.4	28.6	13.5
Enthusiasm / passion / motivation	10.3	11.1	20.0	12.6
Interpersonal skills	17.9	22.2	17.1	9.4
Personality	10.3	33.3	8.6	8.5
Experience / track record	46.2	11.1	25.7	7.4
Communication skills	33.3	33.3	25.7	6.7
Adaptability / flexibility	15.4	0	11.4	6.1
Creativity / innovation / initiative	12.8	0	17.1	6.0
Lifelong learner/willingness to learn	7.7	11.1	14.3	3.1
Team work skills	15.4	22.2	17.1	2.6
Leadership and problem solving	7.7	0	22.9	2.4
Grade point average	12.8	0	8.6	2.0
Formal qualification	10.3	11.1	0	1.8
Intelligence	0	0	2.9	1.4
Life experience, maturity, wisdom	0	0	5.7	0.9
Employer references	0	0	0	0.4
Looks, health, personal presentation	0	22.2	11.4	0.3
Networks and memberships	2.6	0	0	0.2
English language proficiency/literacy	2.6	0	0	0
Citizenship status	2.6	0	0	0
Total (count)	**102**	**21**	**96**	**1170**

Work experience was the most common response for NESB students, some of whom expressed frustration at the requirement for experience immediately after graduation:

> "Work experience, despite just coming out of university and not having worked during the course of study";
>
> "[Employers look for] graduates who have work experience, which is hard to gain because to get work experience they expect work experience."

Communication skills were the second most mentioned theme among the NESB students, and were also regarded as important by the Indigenous and low SES students; however, the students tended to note oral and written communication skills without providing much detail. One NESB student noted the need for "*perfect writing and speaking*", but only one student explicitly mentioned English language proficiency. Interpersonal skills also emerged as a concern, with students noting shyness and awkwardness in social situations.

'*Confidence*' was frequently referred to as something that employers sought and as a characteristic of professionals in their field. The third most common response for NESB students was discipline skills and knowledge. Once again they gave little detail about what they meant other than fairly general reference to "*knowledge and skills related to the profession*" or being "*well informed in the related discipline*".

Indigenous students and low SES students made most mention of professionalism (including work ethics) and this was a theme also regarded as important by NESB students. They gave a little more information about what they meant here with comments such as:

> *"Someone who acts professionally at all times".*
>
> *"Professional standards, honesty, time management, job loyalty, respect for self and others, high level of self-awareness, polite, friendly, hard-working, diligent, sense of duty, the ability to work ethically".*

Personality was another common theme for Indigenous students, with reference to characteristics such as "*confidence*" which were also common among other students. In contrast to other students, however, some Indigenous students made reference to the search for justice, with comments such as "*seeker of justice*" and "*strong sense of social justice*". In addition one Indigenous student referred to "*self-critical reflection to acknowledge judgements and move towards being non-judgemental*".

Low SES placed most emphasis on knowledge and skills and also on professionalism. In contrast to NESB, Indigenous and non-equity students, low SES students placed more emphasis on leadership and problem solving, with reference to elements such as:

> *"Can lead and take charge when needed".*
>
> *"Easy to get along with in a group situation but can take charge if necessary depending on the job area".*
>
> *"Someone that looks at all things as an opportunity and can approach it in a refreshing smart way".*

Low SES students also tended to bring together a number of elements in their responses, providing more detailed information than the other two equity groups. Examples included:

> *"Work experience. Someone who is well presented, is professional, punctual, interested in the job they are applying for, has researched the company well, has ambition to do well, is reliable".*
>
> *"Passion, determination, problem-solving skills, confidences, punctuality, active listening, organisation, productive learning and implementing strategies from constructive feedback to increase performance of student's skills".*

Among non-equity students, with the cases in the student equity groups removed, the results were again fairly similar, with greatest emphasis placed on discipline-specific skills and knowledge, professionalism and enthusiasm. Given their greater numbers, non-equity students tended to mention a whole range of other factors in addition to the key themes. However, they paid less attention to factors such as team work skills and willingness to learn which were emphasised by students from the equity groups. One example from a low SES student was:

> *"Productive learning and implementing strategies from constructive feedback to increase performance".*

The non-equity cohort was more likely to mention commitment and loyalty as an aspect of professionalism. The students were also more likely to emphasise the need to be able to apply theory in practice: for example,

> "*Reliability and a strong work ethic. Graduates should be able to apply the skills taught to real life circumstances*".

The application of skills and knowledge was a common theme in the mentions of experience, and the alignment between theory and practice was a far more common theme among the non-equity cohort. Two examples of multi-faceted responses were included below. These responses were among many that showed a deep awareness of desirable employability skills and attributes:

> *"Real life experience which the new graduate can draw on. Good interpersonal skills and adaptability into the team. Ability to problem solve and handle difficult situations. Skills related to the degree you've studied. Independence to work alone however the ability to approach a more senior employee when faced with a complex situation. Drive to achieve / succeed, continue learning, attend professional development opportunities. Someone who can effectively balance work & life to avoid burnout. Confidence. Ability to build rapport with clients/ patients. Lateral thinking".*

> *"An ability to collaborate and take part in shared decision making with clients and colleagues. Effective communication skills tailored to the client the graduate is supporting. Professionalism by being punctual, displaying positive work ethic, adhering to the service's standard policies and procedures. Being organised with documentation, engaging in continuous reflective practice, committing to professional development and being respectful to clients and colleagues. Leadership skills by taking the initiative to facilitate the client in problem solving possible solutions to overcome the barriers they have in achieving their goals".*

Students were also asked to identify the sources of knowledge used to identify characteristics of a professional. Double the number of Indigenous students, low SES students and non-equity students mentioned university teaching staff as sources of information, demonstrating that they relied of them to a much greater extent than other sources such as families, friends and the internet. In contrast, NESB students gave equal mention to family, university teaching staff, the internet and the school they had previously attended.

Around one third of non-equity graduates mentioned all other factors in addition to university teaching staff but very few or no low SES students and Indigenous students noted other sources of information. This suggests that university teaching staff are a particularly critical source of information on careers and professional identities for low SES and Indigenous students.

Differences between self and professional

Respondents were asked to list any differences between themselves and a professional, based on their responses to the above question. Once again there is a significant focus on skills and knowledge related to the discipline with students commenting on aspects such as "*I have a lot of knowledge and skills to acquire and learn yet*". For low SES and non-equity students another area in which they felt differences between themselves and a professional was professionalism, with a mention of factors including "*I don't often see projects through to completion*".

Table 6 shows the number of mentions of each of the same themes as reported in Table 5 above for NESB students, Indigenous students, low SES students and non-equity students.

Once again there is a significant focus on skills and knowledge related to the discipline with students commenting on aspects such as "*I have a lot of knowledge and skills to acquire and learn yet*". For low SES and non-equity students another area in which they felt differences between themselves and a professional was professionalism, with a mention of factors including "*I don't often see projects through to completion*".

Table 6: Differences between self and a professional

Characteristics	**Occurrence in each cohort (count)**			
	NESB	Indigenous	Low SES	Non-equity
Discipline-specific skills & knowledge	13	2	5	25
Professionalism (work ethics)	1	0	3	14
Enthusiasm / passion / motivation	1	0	1	16
Interpersonal skills	1	0	1	8
Personality (including confidence)	1	1	2	21
Experience / track record	0	0	0	12
Communication skills	1	0	1	6
Adaptability / flexibility	0	0	2	6
Creativity / innovation / initiative	1	0	0	9
Lifelong learner/willingness to learn	0	0	0	0
Team work skills	1	0	0	1
Leadership and problem solving	0	0	2	1
Grade point average	0	0	0	0
Formal qualification	0	0	0	3
Intelligence	0	0	0	1
Life experience, maturity, wisdom	1	0	0	3
Employer references	0	0	0	0
Looks, health, personal presentation	0	0	0	1
Networks and memberships	1	0	1	1
English language proficiency/literacy	0	0	0	0
Citizenship status	0	0	0	0
Total (count)	**22**	**3**	**18**	**128**
Number of students (count)	49	9	35	295

Another area that was mentioned by NESB and low SES students was personality (with particular reference to confidence) with one student reporting "*I need to work on being less stressed and anxious in situations and be more relaxed*". Experience was also mentioned, with comments such as "*general lack of experience (feels like we only graze the surface of the subject matter)*". The need to be creative and flexible also arose; one student emphasised the need to "*understand the labour market*".

Strategies to enhance employability

Taking these responses into consideration, students were asked to report their strategies for enhancing employability. Not all students provided a response – suggesting that they may not have had any idea – but data was collected from 213 students in Australia. This is summarised in **Table 7**, showing the number of students in each cohort which mentioned each of the seven themes.

It is clear that studying to further their knowledge was the most popular option to enhance their employability among students in all equity groups and also among non-equity students. Practicing skills was the second most common option among non-equity students but among students in the three equity groups gaining work experience was mentioned more often. The use of university resources was least frequently mentioned.

Table 7: Strategies for enhancing employability

Strategies	Occurrence in each cohort (count)			
	NESB	Indigenous	Low SES	Non-equity
Study to advance knowledge	10	6	10	56
Practicing skills	6	1	6	54
Work experience (placements and professional practice)	7	2	7	45
Contact with professionals (observation, networking)	2	0	4	21
Professional development	1	0	4	12
Personal reflection	0	1	2	10
University resources	0	0	1	1
Number of mentions (count)	**26**	**10**	**34**	**199**
Number of students (count)	25	8	26	154

Students within the equity groups focused on skills and knowledge gained through study and practice and additional experience. Of interest, strategies often referred to informal or self-directed study: for example, "*read more literature regarding creativity and start practicing*". Previous comments about networking and shyness were explained more fully here and align with the experiences of international students who face the challenge of networking and engaging in a new culture and/or language (Facchinetti, 2010). These issues were highlighted in the following comments:

> *"… gain more connection by making more friends and getting to know people more";*
>
> *"Force myself to speak more";*

It is important to note that international students have been found to self-assess more negatively in terms of their skills and attributes, including those relating specifically to their development as professionals (Murff, 2005). To explore this, Bennett, Kapoor, Kaur and Maynard (2015) undertook a comparative study of first-year domestic and international students within an engineering program and found a marked difference between domestic and international students' interpretations of their learning outcomes and associated assessments and activities.

The low self-esteem of international students was pronounced, and the authors noted the need for more research relating to the impact of cultural and educational background on self-esteem. It is likely that some of the difficulties encountered by students for whom English is a second language were similar to those reported by international students, and it is possible that equity groups in general report lower self-esteem. This is significant to higher education because the ability to perceive one's self in terms of roles, attitudes, beliefs and aspirations aligns with the ability to develop socio-cognitive strategies and, in turn, academic performance.

In terms of enhancing their employability, students were asked to what extent their university studies would prepare them for their future work and career. A large proportion of students from the three equity groups and from the non-equity group felt that they would gains skills and knowledge from their studies. Few students in the three equity groups felt that their studies would help them learn how to be a professional, to manage themselves or to navigate the world of work. Only NESB students and non-equity students felt that their degree would help them learn how to interact with others in any numbers.

Student feedback on their degree programs

Students were asked to conclude by providing feedback on their degrees and the extent to which they were helping them prepare for their future work and careers. Students made many positive comments about the quality of the education they were experiencing but there was also a number of comments about a lack of practical experience or connection with professional practice. One Indigenous student noted that "there is not enough practical, real-world application experience".

The feedback from the NESB cohort indicated a focus on greater workplace experience, career information and relevant curriculum. Two NESB students commented on the need for exposure to professional work either through the way their courses were taught or through other activities:

> *"Though the degree is providing the most basic requirements of this profession, it is lacking a teaching style that imitates one for the real world thus it is not maximising the preparation required to work in the real world".*

> *"I would like to see some more field study, such as: visiting offices/company in IT environment, it does not have to be only the company like Microsoft, CISCO, etc. But can be OPTUS, or maybe police department. Showing what kind of career that in IT field could have in the future. Giving more information regarding career in IT. Provide internship with various selection and can choose by students, maybe based on what they did best in their study".*

Low SES students also commented on this lack of exposure to the realities of work, giving feedback on their degrees that referred to the need for a greater connection with career paths:

> *"I definitely can see how my degree has improved my problem solving ability and the way I would approach a relevant problem. It's given me a lot of experience in this regard. It's probably lacking in providing a practical application for my knowledge. Not many employees are going to want me to benchmark sorting algorithms, for example".*

> *"I would like to be informed on how we apply for jobs once graduated and where to find job opportunities.*

Recommendations

The project reported here utilised two rich data sources to gain new insights into the graduate outcomes of students from disadvantaged backgrounds. It systematically analysed Australian Graduate Survey (AGS) data from 2014 to uncover nuanced patterns of graduate outcomes for seven cohorts of graduates from disadvantaged backgrounds (Indigenous, with a disability, NESB, born outside Australia, regional, low SES and females in engineering and information technology fields).

The project also employed data from an OLT-funded study into employment preparedness among university students to identify particular concerns and assumptions among students from disadvantaged backgrounds.

The project was undertaken at a time in which graduate employability is subject to increasing scrutiny and in which universities and government are expressing concern about patterns of graduate outcomes and looking for ways to address these concerns. The project was also undertaken at a time when the AGS instrument was undergoing revision.

In this final section, we draw on the insights from this project to make a number of recommendations for government and universities. These approach the issue of graduate employability from a number of perspectives and focus on means to enhance graduate outcomes for university students from disadvantaged backgrounds.

Recommendations relating to data collection

In analysing the data for this project it became clear that there were elements of the AGS data collection instrument that could be revised to provide more targeted data than is currently available. The major recommendations in this respect are as follows:

1. Use a measure of post-graduation employment that distinguishes between employment gained as a result of graduation and employment that is a continuation of that done while studying. Ensure that this measure can differentiate between graduate-level and other work.

Data on graduate employment rates is widely promoted, but our analysis suggests that many graduates are employed in the same positions they held while they were studying and for which the qualification they have completed is not a requirement. We recommend that different types of graduate employment outcome be amassed and reported in order to avoid simplistic assumptions.

2. Make provision for multiple graduate outcomes in reporting AGS data, such as graduates who undertake multiple part time roles or consulting roles that combine to provide full-time employment.

Our analysis noted that many graduates have multiple graduate outcomes, such as studying, working and seeking employment simultaneously. It is difficult to determine which of these, if any, takes precedence over the others. In this context, the reporting of graduate outcomes needs to highlight the multiple roles that many graduates inhabit and consider these as a chosen pathway towards future career outcomes.

3. Broaden definitions of graduate success in light of the changing labour market and graduates' increasingly diverse activities. The notion that a full time job is the ultimate graduate outcome is increasingly out of date with graduates involved in entrepreneurship and start-up activities that do not neatly fit into current AGS categories.

Traditionally, the proportion of graduates in full time employment has been regarded as the benchmark for a 'successful' graduate outcome. This is a limited measure of success which denies the existence of multiple activities among contemporary graduates and promotes misleading comparisons between graduates from different disciplines.

The notion of full time employment does not take account of the myriad activities in which many graduates are involved, such as multiple job holding, start-up activities, partial self-employment, combining employment across different economic sectors and utilising a first qualification as a stepping stone to the next.

4. Gather data from graduates at multiple intervals of time following graduation, such as through the Beyond Graduation Survey. This will enable evidence to be collected about the longer-term contribution of university education to careers rather than only the immediate short-term outcomes.

The AGS is a valuable data source, but the timing of its implementation is such that many graduates are in a transitional phase when it is administered. Thus it may provide an inaccurate impression of the extent to which a particular programme has assisted graduates to gain successful graduate outcomes. Data collection at intervals such as 12 months, 5 years, 10 years and 15 years after graduation would enable greater clarity about how careers evolve over time and would provide a greater level of accuracy in determining the value of programmes to graduate outcomes.

Enhancing equity in career outcomes among graduates

In addition to elements of the AGS data collection instrument that could be revised, this project identified needs among students from disadvantaged backgrounds that universities and governments could address in order to enhance equity in career outcomes:

5. Recruit students from disadvantaged backgrounds into all fields of education. Students from disadvantaged backgrounds tend to be clustered in those fields of education which tend to lead to relatively lower status and less well paid occupations such as teaching and nursing, with low numbers of disadvantaged graduates in occupations which tend to be higher status and better paid such as law, medicine and financial services.

There is clear evidence that students from disadvantaged backgrounds are participating in higher education in greater numbers than ever. Yet, as the analysis in this report has shown, they tend to be clustered in particular broad fields of study, and sub-fields within those fields, which tend to lead to lower status and less well paid outcomes.

Higher education participation of any kind is extremely valuable in enhancing the lives of people from disadvantaged backgrounds. Full equality in graduate outcomes, however, will only occur when students from disadvantaged backgrounds are as equally distributed across fields of study as non-equity students. This suggests the need for strategies to target the participation of, and completion of, students from disadvantaged backgrounds in the most high status areas of study, including medicine, law and engineering.

6. Provide support and training for teaching staff in providing students with career information. This is particularly important in helping students from disadvantaged backgrounds find out about career options as they may have few other sources of information to help them.

Graduates who are successful in their careers often have personal insights into what employers look for, what characteristics professionals have and how to gain employment that they glean from their social networks. These insights are extremely valuable in helping students prepare for life post-graduation, but not everyone has access to them.

Our analysis made clear that many university students, and particularly those from disadvantaged backgrounds, seek advice on careers, employment and professional characteristics from the university teaching staff with whom they interact. This advice is particularly important for students from disadvantaged backgrounds, some of whom report that university teaching staff are their only source of this information.

At the same time, many teaching staff are ill-equipped to take on this role as they may know little about contemporary career opportunities and little about how to embed the development of employability skills and capacities.

The engagement of staff from university careers services, successful graduates, visitors from professional organisations in the field in teaching, alongside the integration of other sources of information in the curriculum, can greatly assist teaching staff but they need to be provided with support to make relevant contacts and to coordinate these activities from their institution.

7. Identify barriers to employment among graduates from disadvantaged backgrounds, particularly those with a disability.

Our analysis confirmed that employment outcomes for graduates from disadvantaged backgrounds are often inferior to those from non-equity backgrounds. They may be less likely to be employed, may earn less, may work for different types of employers and use different means to find employment. Multiple layers of disadvantage – for example having a disability and being from a low SES background – appeared to make graduates outcomes worse. But the patterns were extremely nuanced, with some factors enhancing outcomes in particular contexts and others diminishing them in others.

What is lacking is any detailed data on why these patterns are seen. Do they reflect discrimination among employers? Are they worse in certain locations or fields of work than in others? What are the dynamics which result in variations in outcomes? And what interventions could help to ameliorate them? There is a clear need for in-depth research which considers these questions and identify causal factors which impact on the outcomes of graduates from disadvantaged backgrounds.

References

Behrendt, L., Larkin, S., Griew, R., & Kelly, P. (2012). *Review of Higher Education Access & Outcomes for Aboriginal and Torres Strait Islander People*. Canberra: Department of Innovation.

Bennett, D., Kapoor, R., Kaur, R., & Maynard, N. (2015). First year engineering students: Perceptions of engineers and engineering work amongst local and international students. *The International Journal of the First Year in Higher Education*, 6(1), 89-105. Available at http://dx.doi.org/10.5204/intjfyhe.v6i1.272

Bradley, D., Noonan, P., Nugent, H., & Scales, B. (2008). *Review of Australian higher education: Final report*. Canberra: Department of Education, Employment and Workplace Relations.

Department of Education. (2015). Completion rates of domestic bachelor students - A cohort analysis: 2005 – 2013: . Canberra: Department of Education.

Department of Education. (2014). Completion rates of domestic bachelor students 2005 – 2012: A cohort analysis. Canberra: Department of Education.

Department of Education and Training. (2014). Australian Graduate Survey, complete data set. Canberra: Department of Education.

Department of Employment Education and Training. (1990). *A fair chance for all*. Canberra: Australian Governmen Printing Service.

Edwards, D., & McMillan, J. (2015a). *Completing university in Australia: A cohort analysis exploring equity group outcomes*. Camberwell, Victoria: Australian Council for Educational Research.

Edwards, D., & McMillan, J. (2015b). Completing university in a growing sector: Is equity an issue? Adelaidde, SA: Australian Council for Educational Research.

Facchinetti, A. (2010). *Education revolution? Education Today*, 10. Victoria: Minnis Journals Pty Ltd.

Graduate Careers Australia. (2014). Graduate salaries 2013: A report on the earnings of new Australian graduates in their first full-time employment. Melbourne: Graduate Cwereers Australia Ltd.

Martin, L. (1994). *Equity and General Performance Indicators in Higher Education*. Canberra: Australian Government Publishing Service.

Murff, S. (2005). The impact of stress on academic success in college students. *Journal of Association of Black Nursing Faculty*, 16(5), 102-104.

Nelson, B. (2002). *Higher education at the crossroads: An overview paper*. Canberra: Australian Government Printing Service.

Appendix A – AGS characteristics

AGS population – demographic characteristics

Field	Category	n	%
Total	-	142,647	100
Gender	Female	85,447	59.9
	Male	57,135	40.1
Age	22 or under	33,020	23.2
	23 to 25	43,191	30.3
	26 to 32	31,526	22.1
	33 or over	34,835	24.4
Indigenous	Yes	1,106	0.8
	No	139,032	99.2
Disability	Yes	4,291	3.0
	No	137,320	97.0
Main language	English	99,459	71.6
	Other	39,408	28.4
Born in Australia	Yes	86,007	60.9
	No	55,166	39.1
Socio-Economic Status Quartile	1st (bottom)	11,151	10.0
	2nd	17,752	15.9
	3rd	29,096	26.1
	4th (top)	53,499	48.0
State	NSW	36,424	32.7
	VIC	31,191	28.0
	QLD	18,928	17.0
	SA	8,491	7.6
	WA	10,591	9.5
	TAS	1,974	1.8
	NT	675	0.6
	ACT	3,175	2.8
Location	Metropolitan	86,025	76.7
	Regional	25,424	22.7

AGS population - educational characteristics

Field	Category	%	n
Institutional grouping	Go8	44,836	31.4
	ATN	26,491	18.6
	IRUA	20,490	14.4
	RUN	9,463	6.6
	Ungrouped	41,367	29.0
Institutional location	Metropolitan	115,910	81.3
	Regional	26,737	18.7
Level of qualification	Bachelor degree	78,946	55.3
	Bachelor degree (honours)	6,208	4.4
	Graduate certificate	8,179	5.7
	Graduate/Postgraduate diploma	9,092	6.4
	Master degree by research	745	0.5
	Master degree by coursework	31,294	21.9
	Doctorate by research	4,551	3.2
	Advanced diploma or diploma	911	0.6
	Associate degree	995	0.7
	Other (Other award course, graduate qualifying or preliminary, doctorate by coursework)	463	0.3
Main attendance mode	Internal (on-campus)	110,433	77.7
	External (distance)	20,171	14.2
	Mixed mode	11,460	8.1
Main attendance type	Mainly full-time	109,004	76.7
	Mainly part-time	33,088	23.3
Means of financing study	HECS paid upfront	12,490	8.8
	HECS deferred	71,117	50.1
	International fees	29,426	20.7
	Australian fees	25,520	18.0
	APA or RTS research	3,521	2.5
Broad field of education	Natural & Physical Sciences	10,518	7.4
	Information Technology	5,134	3.6
	Engineering and Related Technologies	9,445	6.6
	Architecture and Building	3,875	2.7
	Agriculture, Environmental and Related	2,086	1.5
	Medicine & related	24,945	17.5
	Education	15,467	10.8
	Management & Commerce	33,642	23.6
	Society & Culture	28,004	19.6
	Creative Arts	9,446	6.6
	Food, Hospitality & Personal Services	21	0.0
	Mixed Field Programmes	45	0.0
Work during final year	Yes	101,644	71.7
	No	40,129	28.3

AGS population – summary of outcomes

Field	Category	%	n
Paid work status	Full time	62,438	44.4
	Part time	44,029	31.3
	Not working	34,025	24.2
Seeking work	Yes	51,720	37.2
	No	87,325	62.8
Self-employment	Yes	5,998	5.8
	No	97,008	94.2
Type of employment	Permanent or open-ended contract	49,606	48.3
	Fixed-term contract >12 months	8,223	8.0
	Fixed-term contract < 12 months	14,902	14.5
	Temporary or casual	30,012	29.2
First full time job	Yes	31,269	39.1
	No	48,684	60.9
Means of finding employment	Family or friends	20,650	20.8
	Advertisement on the internet	20,743	39.1
	Approached employer directly	11,647	11.7
Importance of qualification	Formal requirement	34,064	33.2
Importance of field	Formal requirement	26,753	26.3
Further study status	Studying full-time	25,087	18.1
	Studying part-time	9,564	6.9
Same field of education	Yes	23,105	69.2
	No	10,280	30.8

Appendix B – Student survey

These survey questions were delivered online in a dynamic format which meant that the sets of questions students were asked to respond to depended on their response to previous questions. This means that no student was required to answer all questions shown here.

There are 53 questions in this survey

Introduction

1 [INTRO2]

I have been informed of and understand the purpose of the study.

I have been given the opportunity to ask questions about the study and my participation.

I understand that I can withdraw my participation at any time without prejudice or negative consequences.

I understand that results will be published in the form of a report, academic papers and presentations. No information that might identify me will be used in published material.

Based upon the above information, please indicate your consent to participate in the study by completing the statement of consent below:

I agree to participate in this study, titled: *Strategies Enhancing Graduate Employability (SAGE)* *

Please choose **only one** of the following:

Yes

No

2 [INTRO3]

Unfortunately you cannot participate in this survey unless you agree to accept the ethics statement.

If you wish to change your mind, select 'yes' above

Otherwise, select 'next' to exit

About my institution (university or TAFE)

3 [UNI1]

I am attending ... institution

? (What is the name of your university or TAFE?)

About my previous education

4 [PAST1]

I completed the previous education before starting my current course:

Please choose **all** that apply:

High School

TAFE

University

Other

? Select as many as relevant

5 [PAST2]

I finished high school in ...

? (which year?)

6 [PAST3]

I completed ... at high school

? e.g. VCE, International Baccalaureate, A Levels

7 [PAST4]

I finished TAFE in ...

? (Which year?)

8 [PAST5]

I studied ... at TAFE

? (e.g. certificate, diploma, ...)

9 [PAST6]

I finished my university course in ...

? (Which year?)

10 [PAST7]

I studied ... at university

? (e.g. bachelor degree in biology)

11 [PAST7]

I completed my course at the same university

Please choose **only one** of the following:

Yes

No

12 [PAST8]

I completed the following kind of education ...

13 [PAST9]

I completed my previous education in ...

? (Which year?)

14 [PAST10]

I completed my previous education at ...

? (Which institution?)

About my work experience

15 [WORK1]

I have the following work experience

None

Part time work

Full time work

16 [WORK2]

I did this work between ...

? (Start year and end year)

17 [WORK3]

I did the following type of work ...

? (Give a short description)

18 [WORK4]

On average, I worked this many hours per week ...

About me

19 [ME1]

My gender is ...

Female

Male

Transgender

20 [ME2]

I am ... years old

21 [ME3]

I am ...

Aboriginal or Torres Strait Islander

Non-Indigenous

22 [ME4]

My nationality is ...

Australian

Another nationality

23 [ME5]

My nationality is ...

24 [ME6]

My first language is ...

English

Another language

25 [ME7]

My first language is ...

About my parents

26 [PARENT1]

The highest level of education my parents have is ...

Mother, father or both parents has a postgraduate qualification (Masters or PhD)

Mother, father or both parents has a Bachelor degree

Mother, father or both parents has a TAFE qualification

Mother, father or both parents has completed high school

Neither parents have completed high school

I do not know

About me as a student

27 [STU1]

My degree programme is ...

?(e.g. bachelor of science)

28 [STU2]

My major or intended major is ...

? (e.g. chemistry)

29 [STU3]

I choose this major because ...

I had a high enough ATAR score to be accepted

I liked this discipline at school

I think it will lead to an interesting career

I want to have a high income in the future

Other

? (Mark all that are relevant)

30 [STU6]

If 'other', please specify

31 [STU4]

I am currently in the ... year of my degree

First

Second

Third

Fourth

Fifth

Sixth

? (Which year?)

32 [STU5]

I am studying ...

Full time

Part time

33 [STU6]

I expect to do further study after I finish my current degree

Yes

No

About me in the future (1)

34 [FUT1]

Three to five years after graduation I HOPE to be doing .....

? (eg working as a ..., studying for a PhD, ...)

35 [FUT2]

I think that employers look for the following things in graduates ...

? (List as many things as you can think of)

36 [FUT3]

A professional in my major's study area has the following characteristics ...

1

2

3

4

5

6

? (List at least three characteristics)

37 [FUT5]

I see the following differences between me as a person and these professional characteristics (the ones you listed above)

1

2

3

4

5

Other

? (List as many as you can think of)

38 [FUT6]

The strategies I plan to use to develop these characteristics are ...

39 [FUT7]

The timeframe for these strategies is ....

? (e.g. in the next six months)

40 [FUT4]

I used the following information sources to come up with the characteristics of a professional in my major's study area ....

My parents

My family

My friends

My school

Teaching staff at my university or TAFE

Internet

Other

? (Choose all that are relevant)

41 [FUT14]

If 'other', please specify

About me in the future (2)

42 [FUT12]

Three to five years after graduation I EXPECT to be doing the following ...

? (Give a description of what you expect your life to be like)

43 [FUT8]

What I learn in my degree will prepare me for my future work and career in the following ways ....

1

2

3

4

5

Other

? (List as many as you can think of)

44 [FUT11]

[This item replicates one in the AUSSE instrument and was shared with the research team by the Australian Council for Educational Research]

In my experience at this institution in the current academic year, I have talked about my career plans with teaching staff or advisors ...

Never

Sometimes

Often

Very often

45 [FUT9]

In 15 years time I EXPECT to be doing the following ...

? (Give a short description of what you expect your life to be like)

Professional identity

The items in this section were developed by Adams, Hean, Sturgis and Clark (2006) for use with higher education students.

46 [IDENT1]I have a clear idea of what I am studying to become (i.e. the professional role I am likely to have in the future)

Yes

No

47 [IDENT2]

Thinking about this professional role – referred to here as 'this profession' – please indicate how much you agree with the following statements

Please choose the appropriate response for each item:

Strongly disagree

Disagree

Not sure

Agree

Strongly agree

I feel I have strong ties with members of this profession

I feel like I am a member of this profession

I am often ashamed to admit that I am studying for this profession

I find myself making excuses for belonging to this profession

I try to hide that I am studying to be part of this profession

I am pleased to belong to this profession

I can identify positively with members of this profession

Being a member of this profession is important to me

I feel I share characteristics with other members of the profession

48 [IDENT3]

Thinking about graduates who have done the same degree as you please indicate how much you agree with the following statements

Please choose the appropriate response for each item:

Strongly disagree

Disagree

Not sure

Agree

Strongly agree

I feel I have strong ties with those who have done the same degree as me

I feel like I am a member of a community of those who have done the same degree as me

I am often ashamed to admit that I am doing this degree

I find myself making excuses for doing this degree

I try to hide that I am doing this degree

I am pleased to belong to the group of people who have done the same degree as me

I can identify positively with others who have done the same degree as me

Being a member of the group of graduates who have done the same degree is important to me

I feel I share characteristics with others who have done the same degree as me

Managing career and work life

The items in this section were kindly shared with the research team by the Ithaca Group (nd). They were developed as a self-assessment questionnaire for the Core Skills for Work Framework but have not been published.

49 [MANAGE1]

When I think about identifying career and work options, I ...

Could use some advice to see where my interests and experience fit into the world of work

Can see some work options that suit me, but would benefit from some further advice

Draw on my personal skills and interests and familiar processes to develop my career and address barriers and skill gaps where I can

Balance my circumstances, experience, skills, goals and options with the complexities of the world of work, seeking trusted advice if required

Manage the ongoing complexities of long term career development through personal reflection and response to actual and potential changes

? Select all that are relevant

50 [MANAGE2]

When it comes to finding work I ...

Can see what's required for some jobs, but need some help with how to apply for work

Can find and apply for suitable job opportunities using a few familiar job-finding and application techniques

Am comfortable with finding job vacancies and can present my skills and experience in relation to job requirements

Have developed broad job seeking skills and use contacts and networks to advance my career

Successfully rely on my experience, reputation and established networks to identify opportunities where my interests and skill set are a strong match with the potential role

? Select all that are relevant

51 [MANAGE3]

In order to develop the relevant skills and knowledge required for my work and career, I...

Participate in training for my role when it is offered but am not always confident in asking for help

Take steps to develop skills and qualifications for my role and sometimes ask for feedback on my work

Use both formal and informal learning to develop my skills and knowledge for my role and am starting to recognise the importance of on-going learning

Regularly use feedback and self-reflection to improve my performance and set my own learning challenges in order to develop my career path

Continually reflect on my performance and seek and use feedback as an integral part of my work, and I have innovative ways of managing my own learning and contributing to the learning of others

? Select all that are relevant

Conclusion

52 [FUT13]

Finally, I would like to give the following feedback on my current degree and how it is helping me prepare for my future work and career ...

53 [FUT15]

Thank you very much for taking the time to respond to these questions.

Thank you for your participation.

Thank you for completing this survey.

Endnotes

[i] $\chi 2$ (df=19, N=105,741) =2697.307, p <0.001, Cox and Snell R2 = 0.025, Nagelkerke R2 = 0.042. Hosmer & Lemeshow Test, $\chi 2$ (df=8) = 74.530, p <.001

[ii] χ^2 (df = 27, N= N=70,840) = 4,489.825, p <0.001, Cox and Snell R^2 = 0.061, Nagelkerke R^2 = 0.099. Hosmer & Lemeshow Test, χ^2 (df=50) = 22.915, p = .003

[iii] χ^2 (df = 50, N=39,270) = 10256.259, p <0.001, Cox and Snell R^2 = 0.203, Nagelkerke R^2 = 0.331. Hosmer & Lemeshow Test, χ^2 (df=8) = 20.017, p = .010.

[iv] $\chi 2$ (df=18, N=959) = 35.821, p =0.007, Cox and Snell R2 = 0.037, Nagelkerke R2 = 0.059. Hosmer & Lemeshow Test, $\chi 2$ (df=8) = 7.761, p = .457.

[v] χ^2 (df = 45, N=529) = 82.737, p=0.001, Cox and Snell R^2 = 0.138, Nagelkerke R^2 = 0.218. Hosmer & Lemeshow Test, χ^2 (df=8) = 7.755, p = .458

[vi] χ^2 (df = 48, N=258) = 129.958, p <0.001, Cox and Snell R^2 = 0.342, Nagelkerke R^2 = 0.530. Hosmer & Lemeshow Test, χ^2 (df=8) = 7.551, p = .479

[vii] χ^2 (df=18, N=3,495) = 127.524, p <=0.001, Cox and Snell R^2 = 0.034, Nagelkerke R^2 = 0.048. Hosmer & Lemeshow Test, χ^2 (df=8) = 6.659, p = .574.

[viii] χ^2 (df = 46, N=2,057) = 270.685, p <0.001, Cox and Snell R^2 = 0.107, Nagelkerke R^2 = 0.150. Hosmer & Lemeshow Test, χ^2 (df=8) = 10.043 p = .262

[ix] χ^2 (df = 48, N=1,624) = 659.051, p <0.001, Cox and Snell R^2 = 0.334, Nagelkerke R^2 = 0.467. Hosmer & Lemeshow Test, χ^2 (df=8) = 3.155 p = .924

[x] $\chi 2$ (df = 17, N=23,672) = 431.513, p <0.001, Cox and Snell R2 = 0.018, Nagelkerke R2 = 0.031. Hosmer & Lemeshow Test, $\chi 2$ (df=8) = 77.473 p <0.001.

[xi] χ^2 (df = 45, N=15,721) = 1216.607, p <0.001, Cox and Snell R^2 = .074, Nagelkerke R^2 = 0.127. Hosmer & Lemeshow Test, χ^2 (df=8) = 20.284 p =.009

[xii] χ^2 (df = 47, N=7,041) = 1749.342, p <0.001, Cox and Snell R^2 = 0.200, Nagelkerke R^2 = 0.339 Hosmer & Lemeshow Test, χ^2 (df=8) = 17.013 p =.030

[xiii] χ^2 (df = 19, N=88,591) = 1262.623, p <0.001, Cox and Snell R^2 = 0.014, Nagelkerke R^2 = 0.024 Hosmer & Lemeshow Test, χ^2 (df=8) = 52.010 p <.001

[xiv] χ^2 (df = 46, N=59,200) = 3108.290, p <0.001, Cox and Snell R^2 = 0.051, Nagelkerke R^2 = 0.087 Hosmer & Lemeshow Test, χ^2 (df=8) = 25.781 p <.001

[xv] χ^2 (df = 49, N=33,815) = 7,601.724, p <0.001, Cox and Snell R^2 = 0.182, Nagelkerke R^2 = 0.307. Hosmer & Lemeshow Test, χ^2 (df=8) = 33.900 p <.001.

[xvi] $\chi 2$ (df = 18, N=25,047) = 718.237, p <0.001, Cox and Snell R2 = 0.028, Nagelkerke R2 = 0.043. Hosmer & Lemeshow Test, $\chi 2$ (df=8) = 10.636 p =0.223.

[xvii] χ^2 (df = 46, N=16,433) = 1115.706, p <0.001, Cox and Snell R^2 = 0.65, Nagelkerke R^2 = 0.096. Hosmer & Lemeshow Test, χ^2 (df=8) = 10.764 p =.215.

[xviii] χ^2 (df = 48, N=8,236) = 3096.716, p <0.001, Cox and Snell R^2 = 0.258, Nagelkerke R^2 = 0.385. Hosmer & Lemeshow Test, χ^2 (df=8) = 10.778 p =.215.

[xix] $\chi 2$ (df = 17, N=8,309) =401.635, p <0.001, Cox and Snell R2 = 0.037, Nagelkerke R2 = 0.058. Hosmer & Lemeshow Test, $\chi 2$ (df=8) = 3.050 p =0.931.

[xx] $\chi 2$ (df = 44, N=5,307) =702.238, p <0.001, Cox and Snell R2 = 0.098, Nagelkerke R2 = 0.153. Hosmer & Lemeshow Test, $\chi 2$ (df=8) = 5.560 p =0.696.

[xxi] $\chi 2$ (df = 47, N=3,196) =1429.727, p <0.001, Cox and Snell R2 = 0.282, Nagelkerke R2 = 0.441. Hosmer & Lemeshow Test, $\chi 2$ (df=8) = 12.223 p =0.142.

[xxii] $\chi 2$ (df = 18, N=6,305) = 224.941, p <0.001, Cox and Snell R2 = 0.035, Nagelkerke R2 = 0.050. Hosmer & Lemeshow Test, $\chi 2$ (df=8) = 14.996 p =0.059.

[xxiii] $\chi 2$ (df = 38, N=4,600) = 303.035, p <0.001, Cox and Snell R2 = 0.061, Nagelkerke R2 = 0.087. Hosmer & Lemeshow Test, $\chi 2$ (df=8) = 11.129 p =0.194.

[xxiv] $\chi 2$ (df = 39, N=25,047) = 785.031, p <0.001, Cox and Snell R2 = 0.227, Nagelkerke R2 = 0.323. Hosmer & Lemeshow Test, $\chi 2$ (df=8) = 6.285 p =0.615..